Queensland Spatial Educators’ Toolkit
for the Queensland Geography General Senior Syllabus (2019)

Senior secondary (Year 11 – Year 12)

September 2019
Version history

<table>
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<tr>
<th>Date</th>
<th>Version</th>
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Contact for enquires

This publication has been compiled by the Queensland Spatial Information Council, Department of Natural Resources, Mines and Energy, State of Queensland.

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Introduction

The Queensland Spatial Educators’ Toolkit (QSET) is designed to inspire classroom teachers with ideas on how to use spatial technologies in the classroom while meeting the requirements of the Queensland Geography General Senior Syllabus 2019.

Toolkit structure

The Geographic Inquiry model has been part of the Queensland Geography General Senior Syllabus for many years and a modified version is being used in the current version of the syllabus as a framework for investigation.

Key and focus questions have been developed to help structure this the units and topics in this toolkit.

Ferny Grove State High School’s David McCauley, writing for the Geography Teachers Association of Queensland, outlines the inquiry approachi in Queensland geography classrooms. The Australian Geography Teachers Association’s Geogspace site also has a resource dedicated to Geographic inquiryii.

Using the toolkit

Every school will have a different way of organising their units of work although there will be common elements across all classrooms. Look for opportunities to take teaching strategies from QSET and integrate those into your own work program and units. You can select those activities that fit with your work program, are appropriate for your classroom and can slot into your existing units with little reorganisation.

If you need to completely rewrite your units, you could use our structure, in conjunction with the resources provided, as a starting point.

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i https://drive.google.com/file/d/0BxD8DSqqwrVkc2zNvUGF2SVIRbGM/view?usp=sharing

Unit 1: Responding to risk and vulnerability in hazard zones

Topic 1: Natural hazard zones

Key inquiry questions

- What and where are the issues or patterns being studied?
  - What are natural hazards and natural hazard zones?
  - Where are different natural hazard zones found?
  - What patterns are evident in the occurrence of hazards?

- How and why do these issues or patterns develop?
  - What processes affect hazard formation?
  - What processes affect hazard severity?
  - How are the processes a work in catchments operating to cause change?
  - Why do catchment management problems occur?

- What are the impacts of these patterns and issues?
  - What are the social, economic, political and environmental impacts of hazards?
  - How can the impacts of hazards be prioritised?

- What is being done or what could be done to sustainably manage these impacts?
  - How can we mitigate against the negative impacts of hazards?
  - What is being and what could be done to manage hazard impacts by individuals, groups, and governments?
## Topic 1 toolkit

### What and where are the issues or patterns being studied?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the USGS Latest Earthquake map to view recent earthquakes (or historical) or to search for earthquakes in a particular period of time. Examine their distribution and compare that to plate boundaries and volcanoes where you can get that data. This information can be downloaded into a table and imported into another mapping tool if desired.</td>
<td>USGS Latest Earthquake map¹</td>
</tr>
<tr>
<td>Use the Queensland Government’s Floodcheck tool to simulate and examine the flood risk at various Queensland locations.</td>
<td>DNRME Floodcheck²</td>
</tr>
<tr>
<td>View rainfall distribution maps for Australia to determine which areas have rainfall deficiencies over time and are more likely to experience and drought conditions.</td>
<td>Bureau of Meteorology (rainfall deficiencies)³ DNRME Water Monitoring Portal⁴</td>
</tr>
<tr>
<td>Find information on current and past natural disaster and natural hazard events and view information on each hazard, likely impacts, exposure and regional information about each hazard.</td>
<td>Pacific Disaster Centre Disaster Alert⁵</td>
</tr>
<tr>
<td>Review where in the world would be affected by the OPCF recommended 1m sea level rise by 2100. How would your current house be affected? What about your school? How would your nearest town/city be affected?</td>
<td>Flood fire tree⁶</td>
</tr>
<tr>
<td>Examine the location of global eruptions, earthquakes and emissions from 1960-2017 with this tool.</td>
<td>Smithsonian: Eruptions, earthquakes and emissions⁷</td>
</tr>
</tbody>
</table>
How and why do these issues or patterns develop?

<table>
<thead>
<tr>
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</thead>
</table>
| Use the Queensland Government’s Floodcheck tool to simulate and examine the flood risk at various Queensland locations. Look for the ‘simulations’ tab to select your location and run the simulation. You can also view historical flood data, including imagery, for Brisbane (1893, 1974 and 2011), Ipswich (1974 and 2011) and Roma (2011). | DNRME Floodcheck
| View rainfall distribution maps for Australia to determine which areas have rainfall deficiencies over time and are more likely to experience and drought conditions. | Bureau of Meteorology (rainfall deficiencies) | DNRME Water Monitoring Portal
| Use National Geographic’s Mapmaker Interactive to overlay volcanoes, earthquakes and plate boundaries to demonstrate the connections between all three features. | National Geographic Mapmaker Interactive
| View current or historic bushfire events across Australia using the Sentinel bushfire mapper. View weather data, topography, land use, economic value and other data relevant to the bushfire hazard. | Sentinel bushfire map
| Examine the distribution of different hazards globally as well as information on each country’s mitigation potential for natural hazards. Use the tool to evaluate risk of living in each of the following cities: Brisbane, Tokyo, Tehran and Dublin. | Global Risk Map

What are the impacts of these patterns and issues?

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<tr>
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</thead>
</table>
| Summarise the impacts of major disaster events around Australia including deaths, casualties and economic impacts. | Disaster Mapper
| Examine the potential exposure to hazard damage in the Australian context. Use this tool to generate an exposure report for your area of interest. | Australian Exposure Information
What is being done or what could be done to sustainably manage these impacts?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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<tr>
<td><em>We currently have no learning experiences or teaching strategies for this section. If you have any suggested tasks please share with us by contacting <a href="mailto:spatialeducation@dnrme.qld.gov.au">spatialeducation@dnrme.qld.gov.au</a></em></td>
<td></td>
</tr>
</tbody>
</table>

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5. [https://disasteralert.pdc.org/disasteralert/](https://disasteralert.pdc.org/disasteralert/)
7. [https://volcano.si.axismaps.io/](https://volcano.si.axismaps.io/)
11. [https://mapmaker.nationalgeographic.org/](https://mapmaker.nationalgeographic.org/)
13. [https://globalriskmap.terria.io/](https://globalriskmap.terria.io/)
Unit 1: Responding to risk and vulnerability in hazard zones

Topic 2: Ecological hazard zones

Key inquiry questions

- What and where are the issues or patterns being studied?
  - What are ecological hazards?
  - Where do ecological hazards occur?
- How and why do these issues or patterns develop?
  - What processes affect ecological hazard formation?
  - What processes affect ecological hazard severity?
- What are the impacts of these patterns and issues?
  - What are the social, economic, political and environmental impacts of ecological hazards?
  - How can the impacts of ecological hazards be prioritised?
- What is being done or what could be done to sustainably manage these impacts?
  - How can we mitigate against the negative impacts of ecological hazards?
  - What is being and what could be done to manage ecological hazard impacts by individuals, groups, and governments?

Topic 2 toolkit

What and where are the issues or patterns being studied?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
</table>
| View the global distribution of major disease outbreaks and incidences. Examine the links between geography, development and the different types of diseases evident around the world. | Global Incident Map
WHO International Travel and Health interactive map
Healthmap.org |
How and why do these issues or patterns develop?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examine the distribution of different types of cancer across Australia. The data can be refined to uncover interesting patterns by cancer type, location, urban/rural divide and socio economic status.</td>
<td><a href="https://atlas.cancer.org.au/">Australian Cancer Atlas</a></td>
</tr>
</tbody>
</table>

What are the impacts of these patterns and issues?

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<tr>
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</tr>
</thead>
</table>
| Create a tour showing the spread, distribution and/or impacts of a particular disease across the globe or in a specific region. | [Google Tour Builder](https://tourbuilder.withgoogle.com)  
[Google Tour Creator](https://vr.google.com/tourcreator/)  
[Odyssey.js](http://cartodb.github.io/odyssey.js) |

What is being done or what could be done to sustainably manage these impacts?

<table>
<thead>
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<td></td>
</tr>
</tbody>
</table>
Unit 2: Planning sustainable places

Topic 1: Responding to challenges facing a place in Australia

Key inquiry questions

- What and where are the issues or patterns being studied?
  - What are places?
  - How do we define/classify places?
  - Where do different places exist in Australia?

- How and why do these issues or patterns develop?
  - What are the processes at work in remote, rural and urban places?
  - How are the processes at work in communities operating to cause change?
  - Why are communities unsustainable/sustainable?

- What are the impacts of these patterns and issues?
  - What are the social, economic, political and environmental impacts of life in different places?
  - How can the impacts of changes in communities be prioritised?

- What is being done or what could be done to sustainably manage these impacts?
  - What is being done and could be done to enhance the resilience and sustainability of our remote, rural and urban places?
  - Who will make the decisions concerning the sustainability of the community?
## Topic 1 toolkit

**What and where are the issues or patterns being studied?**

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Examine the many different indigenous nations across Australia. Discuss indigenous connection to place through art, stories and more.</td>
<td>ABC Indigenous language map¹</td>
</tr>
<tr>
<td>Use the Queensland Government’s Floodcheck tool to simulate and examine the flood risk at various Queensland locations. Look for the ‘simulations’ tab to select your location and run the simulation. You can also view historical flood data, including imagery, for Brisbane (1893, 1974 and 2011), Ipswich (1974 and 2011) and Roma (2011).</td>
<td>DNRME Floodcheck²</td>
</tr>
</tbody>
</table>
| Survey personal water use across the class and create a map showing the distribution of water use across your local area. | Google My Maps³  
Scribble Maps⁴ |
| Measure water quality data in a local waterway. Combine this in a table with locational data (latitude and longitude) and import the data into an online mapping tool that supports data imports. Represent the water quality on the map using appropriate mapping conventions. | Google My Maps⁵  
Scribble Maps⁶  
Mapping your Waterway from the Queensland Government⁷ |
| Examine the variety of ways that a local or significant waterway is used by humans. Identify the land use along a stretch of your chosen waterway. The Queensland Globe contains information on land use, waterways and drainage basins. | Queensland Globe⁸  
Google Earth⁹ |
| Understand where light pollution exists across Australia using the Light pollution map. | Light pollution map⁴ |
| Get students to create a map showing the distribution of natural resources in Queensland. Consider mining, forestry, water and other resources. | Google My Maps⁹  
Scribble Maps¹⁰ |
### How and why do these issues or patterns develop?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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</thead>
<tbody>
<tr>
<td>View crime statistics across Queensland. Start in your local area, move to your city or region and then examine the state.</td>
<td>Queensland Police online crime statistics[xii]</td>
</tr>
<tr>
<td>Map the locations of transport routes and infrastructure such as public transport, recreational facilities, government services, medical services, educational services etc. in your local area to determine accessibility.</td>
<td>Google My Maps[xiv] Scribble Maps[xv]</td>
</tr>
<tr>
<td>View online satellite images of different populated places. Observe the structure, composition, design and layout of these places and discuss how and why they might be different.</td>
<td>Online map services[xvi] Google Earth[xvii]</td>
</tr>
<tr>
<td>Consider the distribution of different ethnic and other types of groups around your town, city or region. Can a connection be drawn to the physical composition of that area and the demographic composition? Look for evidence of shops, food styles, cultural centres and churches as well as signage, services and facilities present in the area.</td>
<td>SBS Where Australia’s immigrants were born[xviii] Google Street View (via Google Maps)[xix]</td>
</tr>
<tr>
<td>Examine the spatial distribution of the predominant migrant groups in your local area. Link this distribution to real world artefacts such as religious institutions, food outlets or cultural examples.</td>
<td>SBS Where Australia’s immigrants were born[xx] Google Street View (via Google Maps)[xxi]</td>
</tr>
<tr>
<td>Collect data from the ABS Quick Stats website and organise into a table. Import the table into Google My Maps to create a demographic map of the local area. Compare different parts of Australia across key demographic and economic indicators.</td>
<td>ABS Quick Stats[xxii] Google My Maps[xxii]</td>
</tr>
<tr>
<td>Use Google Street View to undertake a virtual field trip to another country. Consider the differences between the place you visit and your local area.</td>
<td>Google Street View (via Google Maps)[xxiv]</td>
</tr>
<tr>
<td>Use historic imagery from Google Earth to view change over time in particular ecosystems. Students can look for evidence of human influence in environments over the period.</td>
<td>Google Earth[xxv]</td>
</tr>
</tbody>
</table>
### What are the impacts of these patterns and issues?

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<tr>
<th>Learning experiences and teaching strategies</th>
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</thead>
<tbody>
<tr>
<td>Use Google Earth to view a specific area with obvious landscape degradation. View land use in the surrounding area to see if there is a connection between how the land is used and landscape degradation. Use Queensland Globe to view zoning, infrastructure, mines and other features that may impact a landscape.</td>
<td>Queensland Globe&lt;br&gt;Google Earth</td>
</tr>
<tr>
<td>Examine the level of multiculturalism in your local area or nearest city. Ask your students to think of examples of evidence of the presence of different cultures in their local area such as names of streets or parks, different shops or places of worship.</td>
<td>SBS Where Australia's immigrants were born</td>
</tr>
<tr>
<td>Get students to create a map showing the distribution of natural resources in Queensland. Consider mining, forestry, water and other resources.</td>
<td>Google My Maps&lt;br&gt;Scribble Maps</td>
</tr>
<tr>
<td>View development data for Australia. Look for geographical patterns. Use layers like income or broadband quality to determine the level of development.</td>
<td>Australian National Map</td>
</tr>
<tr>
<td>Collect ABS data from your local area, region and across Australia. Organise the data into a table, import into Google My Maps and view your representation.</td>
<td>ABS Quick Stats&lt;br&gt;Google My Maps&lt;br&gt;Scribble Maps</td>
</tr>
<tr>
<td>Develop criteria and evaluate how effectively your area provides services and facilities to its residents. Create a map or maps of services and facilities available in your local area as part of your evaluation. You could incorporate field work into this task allowing students to collect more data for analysis.</td>
<td>Google My Maps&lt;br&gt;Scribble Maps</td>
</tr>
<tr>
<td>Measure water quality data in a local waterway. Combine this in a table with locational data (latitude and longitude) and import the data into an online mapping tool that supports data imports. Represent the water quality on the map using appropriate mapping conventions.</td>
<td>Google My Maps&lt;br&gt;Scribble Maps&lt;br&gt;Mapping your Waterway from the Queensland Government</td>
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<tr>
<td>Use historic imagery from Google Earth to view change over time in particular ecosystems. Students can look for evidence of human influence in environments over the period of time.</td>
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<tr>
<td>View development data for Australia. Look for geographical patterns. Use layers like income or broadband quality to determine the level of development.</td>
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What is being done or what could be done to sustainably manage these impacts?

<table>
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<tr>
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<tbody>
<tr>
<td>Have students use an online map creating tool to design their changes to a well-known public space in their local area or city. Consider the demography of the surrounding area, who uses the space and what changes would be appropriate for the best public amenity.</td>
<td>Google My Maps[^xlii] Scribble Maps[^xliii]</td>
</tr>
<tr>
<td>Audit the amount of water lost from taps around the school. Represent this information using different colours on an online map editor before using the map to take or recommend action.</td>
<td>Google My Maps[^xliv] Scribble Maps[^xlv]</td>
</tr>
</tbody>
</table>

[^x]: http://www.abc.net.au/indigenous/map/
[^iii]: https://www.google.com/mymaps
[^iv]: http://www.scribblemaps.com/
[^v]: https://www.google.com/mymaps
[^vi]: http://www.scribblemaps.com/
[^ix]: https://www.google.com/earth
[^x]: https://www.lightpollutionmap.info/#zoom=4&lat=-3078579&lon=15101970&layers=0BTFFFFFFFFFF
[^xi]: https://www.google.com/mymaps
[^xii]: http://www.scribblemaps.com/
[^xiii]: https://www.google.com/mymaps
[^xiv]: http://www.scribblemaps.com/
[^xv]: https://en.wikipedia.org/wiki/List_of_online_map_services
[^xvi]: https://www.google.com/earth
[^xviii]: https://www.google.com/mymaps
[^xxi]: https://www.google.com/mymaps
[^xxiii]: https://www.google.com/mymaps
[^xxiv]: http://www.scribblemaps.com/
[^xxv]: http://www.scribblemaps.com/
[^xxvi]: https://www.google.com/earth
[^xxviii]: https://www.google.com/mymaps
[^xxix]: http://www.scribblemaps.com/
[^xxii]: https://www.google.com/mymaps
Unit 2: Planning sustainable places

Topic 2: Managing challenges facing a megacity

Key inquiry questions

- What and where are the issues or patterns being studied?
  - What are megacities?
  - Where are megacities found?

- How and why do these issues or patterns develop?
  - What historical, economic, social and environmental processes have caused the growth in megacities?
  - What processes are evident in megacities?

- What are the impacts of these patterns and issues?
  - What are the social, economic, environmental and political impacts of megacities on their residents and the broader population?

- What is being done or what could be done to sustainably manage these impacts?
  - What is being done, or could be done by individuals, groups and governments to improve the sustainability of megacities?
  - How can we design, build and manage our megacities to minimise the negative impacts on society?
## Topic 2 toolkit

### What and where are the issues or patterns being studied?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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</tr>
</thead>
</table>
| Using an online satellite image viewer, look for evidence of the influence of our economy (production and consumption) in the design of your local area. | Online map services¹  
Google Earth²  
Google Street View (via Google Maps)³ |
| Examine the spatial distribution of the predominant migrant groups in your local area. Link this distribution to real world artefacts such as religious institutions, food outlets or cultural examples. | SBS Where Australia's immigrants were born⁴ |
| Interconnections between megacities and megacities and other locations | http://worldmap.harvard.edu/maps/connectography |
| Examine historic urban growth across the planet to see how different places’ relative importance and size changes considerably over time. | Two thousand years of urban growth⁵ |
| Examine urban growth across the globe from 1950-2035 to determine where urban growth is occurring. | World city populations⁶ |

### How and why do these issues or patterns develop?

<table>
<thead>
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</table>
| Research the components of a typical household item such as a mobile phone or car and create a tour showing where the components come from. Alternatively, pick a number of items and create a tour showing their country of origin or how they get to Australia. | Google Tour Builder⁷  
Google Tour Creator⁸  
Odyssey.js⁹ |

### What are the impacts of these patterns and issues?

<table>
<thead>
<tr>
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</table>
| Survey the class to determine place of birth or ancestry. Create a tour that visits each of the countries represented in the survey results. Ask students to highlight the different connections evident between Australia and the country in question. | Google Tour Builder¹⁰  
Google Tour Creator¹¹  
Odyssey.js¹² |
What is being done or what could be done to sustainably manage these impacts?

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1. [https://en.wikipedia.org/wiki/List_of_online_map_services](https://en.wikipedia.org/wiki/List_of_online_map_services)
2. [https://www.google.com/earth](https://www.google.com/earth)
7. [https://tourbuilder.withgoogle.com/](https://tourbuilder.withgoogle.com/)
8. [https://vr.google.com/tourcreator/](https://vr.google.com/tourcreator/)
10. [https://tourbuilder.withgoogle.com/](https://tourbuilder.withgoogle.com/)
11. [https://vr.google.com/tourcreator/](https://vr.google.com/tourcreator/)
Unit 3: Responding to land cover transformations

Topic 1: Land cover transformations and climate change

Key inquiry questions

- What and where are the issues or patterns being studied?
  - What are the different land cover types?
  - Where are different land cover types found?
  - How does land cover vary around the world?

- How and why do these issues or patterns develop?
  - What processes cause changes/differences in land cover around the world?
  - What human and physical factors impact on the rate and extent of land cover change?
  - What are the connections between land cover change and climate change?

- What are the impacts of these patterns and issues?
  - What are the possible social, environmental, economic, and political consequences of land cover change?
  - How can the impacts of climate change be prioritised?
  - What are the impacts of climate change on specific land cover types?

- What is being done or what could be done to sustainably manage these impacts?
  - Who will make the decisions about managing the impacts and consequences of land cover change?
  - How should individuals/communities and governments respond to these issues?
Topic 1 toolkit

What and where are the issues or patterns being studied?
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<tr>
<td>Use the National Geographic Mapmaker Interactive to view the different land cover around the world. Relate this to the different types of biomes observed.</td>
<td>National Geographic Mapmaker Interactive(^i)</td>
</tr>
<tr>
<td>View the range of different biomes, their location, their vegetation and other characteristics, across Queensland using the Queensland Globe.</td>
<td>Queensland Globe(^ii)</td>
</tr>
<tr>
<td>View global weather patterns and compare with the distribution of biomes. View current weather, ocean and atmospheric chemical and particulate data.</td>
<td>null school earth(^iii)</td>
</tr>
<tr>
<td>View the distribution of global rainfall and look for patterns related to land cover.</td>
<td>National Geographic Mapmaker Interactive(^iv)</td>
</tr>
<tr>
<td>Use an online satellite image viewer to view bodies of water locally, regionally, nationally and globally. The Queensland Globe has all of Queensland’s drainage basins and waterways.</td>
<td>Queensland Globe(^v)</td>
</tr>
<tr>
<td>View land cover across Australia and Queensland to see the distribution of environments. View Queensland’s rainfall patterns, geology, flood data and more to help.</td>
<td>Australian National Map(^viii)</td>
</tr>
<tr>
<td>Draw a path following a local or significant waterway using an online mapping tool with this feature. Show the elevation profile of the waterway. Note the changing elevation and slope steepness at different locations and how this affects erosion and streamflow.</td>
<td>Google Earth(^ix)</td>
</tr>
<tr>
<td>Measure water quality data in a local waterway. Combine this in a table with locational data (latitude and longitude) and import the data into an online mapping tool that supports data imports. Represent the water quality on the map using appropriate mapping conventions.</td>
<td>Google My Maps(^x)</td>
</tr>
<tr>
<td>View the distribution of precipitation in Australia and Queensland and look for patterns related to land cover.</td>
<td>Bureau of Meteorology MetEye(^x)v</td>
</tr>
<tr>
<td>Use the Queensland Government’s Floodcheck tool to simulate and examine the flood risk at various Queensland locations.</td>
<td>DNRME Floodcheck(^x)</td>
</tr>
<tr>
<td>Learning experiences and teaching strategies</td>
<td>Spatial resources</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Examine how different places on earth have changed since 1984. In your local area try and determine what has changed and why it has changed.</td>
<td>Google Timelapse(^{vii})</td>
</tr>
<tr>
<td>Examine the variety of ways that a local or significant waterway is used by humans. Identify the land use along a stretch of your chosen waterway. The Queensland Globe contains information on land use, waterways and drainage basins.</td>
<td>Queensland Globe(^{viii}) Google Earth(^{ix})</td>
</tr>
<tr>
<td>View and compare water consumption with similar and different places around the state or country. The BoM National Water Account provides comprehensive water use data for nine significant regions across Australia.</td>
<td>Bureau of Meteorology National Water Account(^{xx})</td>
</tr>
<tr>
<td>Use Google Earth to view a specific area with obvious landscape degradation. View land use in the surrounding area to see if there is a connection between how the land is used and landscape degradation. Use Queensland Globe to view zoning, infrastructure, mines and other features that may impact a landscape.</td>
<td>Queensland Globe(^{x}) Google Earth(^{xii})</td>
</tr>
<tr>
<td>Get students to create a map showing the distribution of natural resources in Queensland. Consider mining, forestry, water and other resources.</td>
<td>Google My Maps(^{xxiii}) Scribble Maps(^{xxiv})</td>
</tr>
<tr>
<td>Use the National Geographic Mapmaker Interactive to view the changing precipitation and different land cover around the world. Relate this to the different types of biomes observed.</td>
<td>National Geographic Mapmaker Interactive(^{xxv})</td>
</tr>
<tr>
<td>View the distribution of precipitation in Australia and Queensland and look for patterns related to land cover.</td>
<td>Bureau of Meteorology MetEye(^{xxvi}) Online map services(^{xxvii})</td>
</tr>
<tr>
<td>View the range of different biomes, their location, their vegetation and other characteristics, across Queensland using the Queensland Globe.</td>
<td>Queensland Globe(^{xxvii})</td>
</tr>
<tr>
<td>Use historic imagery from Google Earth to view change over time in particular ecosystems. Students can look for evidence of human influence in environments over the period of time.</td>
<td>Google Earth(^{xxix})</td>
</tr>
</tbody>
</table>
**Learning experiences and teaching strategies** | **Spatial resources**
---|---
Examine the global human footprint while considering what areas are under most stress and how this relates to how the land has been used. | National Geographic Mapmaker Interactive

### How and why do these issues or patterns develop?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
</table>
Get students to create a map showing the distribution of natural resources in Queensland. Consider mining, forestry, water and other resources. | Google My Maps
Scribble Maps |

View the distribution of many animal species to evaluate the importance of the environment and geography to animals and people. | WWF Wildfinder
Map of Life |

Examine global patterns in food security as well as detailed country level statistics using the Global Food Security Index website. | Global Food Security Index |

View the distribution of precipitation in Australia and Queensland and look for patterns related to land cover. | Bureau of Meteorology MetEye
Online map services |

Use QTopo to view specific landforms around Queensland. Students consolidate their knowledge of contour lines by sketching their landform in profile and bird’s eye view. | QTopo |

### What are the impacts of these patterns and issues?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
</table>
Evaluate the impact on Queensland coastlines of sea level rise at a regional scale. | OzCoasts sea level rise maps |
What is being done or what could be done to sustainably manage these impacts?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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</tr>
</thead>
</table>
| Audit the amount of water lost from taps around the school. Represent this information using different colours on an online map editor before using the map to take or recommend action. | Google My Maps xi  
Scribble Maps xii |

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i https://mapmaker.nationalgeographic.org/
iii http://earth.nullschool.net/
iv https://mapmaker.nationalgeographic.org/
vi https://www.google.com/earth
vii https://mapmaker.nationalgeographic.org/
ix https://www.google.com/earth
x https://qldglobe.information.qld.gov.au/
xi https://www.google.com/mymaps
xii http://www.scribblemaps.com/

xv https://en.wikipedia.org/wiki/List_of_online_map_services
xvii https://earthengine.google.com/timelapse/
xix https://www.google.com/earth
xxii https://www.google.com/earth
xxiii https://www.google.com/mymaps
xxiv http://www.scribblemaps.com/
xxv https://mapmaker.nationalgeographic.org/
xxvii https://en.wikipedia.org/wiki/List_of_online_map_services
xxix https://www.google.com/earth
xxx https://mapmaker.nationalgeographic.org/
xxxi https://www.google.com/mymaps
xxs http://www.scribblemaps.com/
xxxii http://www.worldwildlife.org/science/wildfinder/
xxxiii https://mol.org/
xxxiv http://foodsecurityindex.eiu.com/Country
xxxvi https://en.wikipedia.org/wiki/List_of_online_map_services
xl https://www.google.com/mymaps
xli http://www.scribblemaps.com/
Unit 3: Responding to land cover transformations

Topic 2: Responding to local land cover transformations

Key inquiry questions

- What and where are the issues or patterns being studied?
  - What features make up local land cover?
  - Where in the local area is land cover changing?
- How and why do these issues or patterns develop?
  - What are the geographical processes that contribute to land cover change in the local area?
- What are the impacts of these patterns and issues?
  - What impacts do local land cover changes have on the environment, society and the economy?
- What is being done or what could be done to sustainably manage these impacts?
  - What is being done or could be done by individuals, groups and governments to sustainably manage local land cover transformations?
  - Who makes the decisions about managing local land cover changes?

Topic 2 toolkit

What and where are the issues or patterns being studied?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the National Geographic Mapmaker Interactive to view the different land cover around the world. Relate this to the different types of biomes observed.</td>
<td>National Geographic Mapmaker Interactive¹</td>
</tr>
<tr>
<td>View the range of different biomes, their location, their vegetation and other characteristics, across Queensland using the Queensland Globe.</td>
<td>Queensland Globe²</td>
</tr>
<tr>
<td>View global weather patterns and compare with the distribution of biomes.</td>
<td>null school earth³</td>
</tr>
<tr>
<td>View different environments on Google Earth and ask students to interpret each one using the advice from NASA.</td>
<td>NASA How to interpret a satellite image⁴</td>
</tr>
<tr>
<td>Use ESRI’s Human Reach Storymaps and Atlas to examine in detail how human’s influence the land we live on.</td>
<td>Human reach – Part 1⁵, Human reach – Part 2⁶, Human reach – Atlas⁷</td>
</tr>
</tbody>
</table>
## How and why do these issues or patterns develop?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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<tbody>
<tr>
<td>Use historic imagery from Google Earth to view change over time in particular ecosystems. Students can look for evidence of human influence in environments over the period of time.</td>
<td>Google Earth&lt;sup&gt;iii&lt;/sup&gt;</td>
</tr>
<tr>
<td>Get students to create a map showing the distribution of natural resources in Queensland. Consider mining, forestry, water and other resources.</td>
<td>Google My Maps&lt;sup(ix)&lt;/sup&gt; Scribble Maps&lt;sup&gt;x&lt;/sup&gt;</td>
</tr>
<tr>
<td>View the distribution of many animal species to evaluate the importance of the environment and geography to animals and people.</td>
<td>Map of Life&lt;sup&gt;xi&lt;/sup&gt; WWF Wildfinder&lt;sup&gt;xii&lt;/sup&gt;</td>
</tr>
<tr>
<td>View distributions of wealth, water, agriculture and food security across the planet to make connections between.</td>
<td>World Bank Atlas of Development Goals&lt;sup&gt;xiii&lt;/sup&gt; Gapminder&lt;sup&gt;xiv&lt;/sup&gt; StatSilk World Interactive maps&lt;sup&gt;xv&lt;/sup&gt; Canadian Geographic Developing World Interactive&lt;sup&gt;xvi&lt;/sup&gt;</td>
</tr>
<tr>
<td>Examine global patterns in food security as well as detailed country level statistics using the Global Food Security Index website.</td>
<td>Global Food Security Index&lt;sup&gt;xvii&lt;/sup&gt;</td>
</tr>
<tr>
<td>View the distribution of global rainfall and look for patterns related to land cover.</td>
<td>National Geographic Mapmaker Interactive&lt;sup&gt;xviii&lt;/sup&gt;</td>
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<td>Examine the global human footprint while considering what areas are under most stress and how this relates to how the land has been used.</td>
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<tr>
<td>View the distribution of precipitation in Australia and Queensland and look for patterns related to land cover.</td>
<td>Bureau of Meteorology MetEye&lt;sup&gt;xix&lt;/sup&gt; Online map services&lt;sup&gt;x&lt;/sup&gt;</td>
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</table>

## What are the impacts of these patterns and issues?

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<th>Learning experiences and teaching strategies</th>
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<tbody>
<tr>
<td>Examine how different Non-Government Organisations (NGOs) are addressing issues of food security around the world.</td>
<td>NGO Aid Map&lt;sup&gt;xxi&lt;/sup&gt;</td>
</tr>
<tr>
<td>View land cover across Australia and Queensland to see the distribution of environments.</td>
<td>Australian National Map&lt;sup&gt;xxii&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
What is being done or what could be done to sustainably manage these impacts?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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<tr>
<td>We currently have no learning experiences or teaching strategies for this section. If you have any suggested tasks please share with us by contacting <a href="mailto:spatialeducation@dnrme.qld.gov.au">spatialeducation@dnrme.qld.gov.au</a></td>
<td></td>
</tr>
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i https://mapmaker.nationalgeographic.org/
iii http://earth.nullschool.net/
iv http://earthobservatory.nasa.gov/Features/ColorImage/
viii https://www.google.com/earth
ix https://www.google.com/mymaps
x http://www.scribblemaps.com/
xii https://mol.org/
ixiii http://www.worldwildlife.org/science/wildfinder/
ixiv http://datatopics.worldbank.org/sdgatlas/
ixv http://www.gapminder.org/
ixvi http://www.statsilk.com/maps/world-stats-interactive-maps-index#most-popular-interactive-visualizations
ixvii http://worldmap.canadiangeographic.ca/
ixviii http://foodsecurityindex.eiu.com/Country
ixix https://mapmaker.nationalgeographic.org/
xi https://en.wikipedia.org/wiki/List_of_online_map_services
xii http://foodsecurity.ngoaidmap.org/
Unit 4: Managing population change

Topic 1: Population challenges in Australia

Key inquiry questions

- What and where are the issues or patterns being studied?
  - Where does Australia’s population reside?
- How and why do these issues or patterns develop?
  - What demographic processes influence Australia’s population?
- What are the impacts of these patterns and issues?
  - What are the implications on people and communities of population change?
- What is being done or what could be done to sustainably manage these impacts?
  - What is being done, and what could be done by individuals, groups and governments to manage the negative impacts of population change in Australia?
Topic 1 toolkit

What and where are the issues or patterns being studied?
<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examine the global human footprint while considering what areas are under most stress and how this relates to how the land has been used.</td>
<td>National Geographic Mapmaker Interactive(^i)</td>
</tr>
<tr>
<td>View crime statistics across Queensland. Start in your local area, move to your city or region and then examine the state.</td>
<td>Queensland Police online crime statistics(^ii)</td>
</tr>
</tbody>
</table>
| Map the locations of transport routes and infrastructure such as public transport, recreational facilities, government services, medical services, educational services etc. in your local area to determine accessibility. | Google My Maps\(^iii\)  
Scribble Maps\(^iv\) |
| View online satellite images of different populated places. Observe the structure, composition, design and layout of these places and discuss how and why they might be different. | Online map services\(^v\)  
Google Earth\(^vi\) |
| Consider the distribution of different ethnic and other types of groups around your town, city or region. Can a connection be drawn to the physical composition of that area and the demographic composition? Look for evidence of shops, food styles, cultural centres and churches as well as signage, services and facilities present in the area. | SBS Where Australia’s immigrants were born\(^vii\)  
Google Street View (via Google Maps)\(^vii\) |
| Examine the spatial distribution of the predominant migrant groups in your local area. Link this distribution to real world artefacts such as religious institutions, food outlets or cultural examples. | SBS Where Australia’s immigrants were born\(^ix\)  
Google Street View (via Google Maps)\(^x\) |
| Collect data from the ABS Quick Stats website and organise into a table. Import the table into Google My Maps to create a demographic map of the local area. Compare different parts of Australia across key demographic and economic indicators. | ABS Quick Stats\(^xi\)  
Google My Maps\(^xii\) |
| View development data for Australia. Look for geographical patterns. Use layers like income or broadband quality to determine the level of development. | Australian National Map\(^xiii\) |
### Learning experiences and teaching strategies

| Collect ABS data from your local area, region and across Australia. Organise the data into a table, import into Google My Maps and view your representation. | **Spatial resources**
|---|---|
| **ABS Quick Stats**<sup>xiv</sup>  
**Google My Maps**<sup>xv</sup>  
**Scribble Maps**<sup>xvi</sup> |  |

| Develop criteria and evaluate how effectively your area provides services and facilities to its residents. Create a map or maps of services and facilities available in your local area as part of your evaluation. You could incorporate field work into this task allowing students to collect more data for analysis. | **Spatial resources**
|---|---|
| **Google My Maps**<sup>xvii</sup>  
**Scribble Maps**<sup>xviii</sup> |  |

| Examine the spatial distribution of the predominant migrant groups in your local area. Link this distribution to real world artefacts such as religious institutions, food outlets or cultural examples. | **Spatial resources**
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>SBS Where Australia’s immigrants were born</strong>&lt;sup&gt;xix&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

### How and why do these issues or patterns develop?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
</table>
| Get students to create a map showing the distribution of natural resources in Queensland. Consider mining, forestry, water and other resources. | **Spatial resources**
| **Google My Maps**<sup>xx</sup>  
**Scribble Maps**<sup>xxi</sup> |  |

| View the distribution of many animal species to evaluate the importance of the environment and geography to animals and people. | **Spatial resources**
|---|---|
| **WWF Wildfinder**<sup>xxii</sup>  
**Map of Life**<sup>xxiii</sup> |  |

| View distributions of wealth, water, agriculture and food security across the planet to make connections between. | **Spatial resources**
|---|---|
| **World Bank Atlas of Development Goals**<sup>xxiv</sup>  
**Gapminder**<sup>xxv</sup>  
**StatSilk World Interactive maps**<sup>xxvi</sup>  
**Canadian Geographic Developing World Interactive**<sup>xxvii</sup> |  |

| Examine global patterns in food security as well as detailed country level statistics using the Global Food Security Index website. | **Spatial resources**
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global Food Security Index</strong>&lt;sup&gt;xxviii&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

| View the distribution of global hunger along with progress towards a range of global hunger goals such as the Millennium Development Goals. | **Spatial resources**
|---|---|
| **Global Hunger Index**<sup>xxix</sup>  
**FAO Hunger Map 2015**<sup>xxx</sup> |  |
What are the impacts of these patterns and issues?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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<tbody>
<tr>
<td>Examine how different Non-Government Organisations (NGOs) are addressing issues of food security around the world.</td>
<td>NGO Aid Map&lt;sup&gt;xxx&lt;/sup&gt;</td>
</tr>
<tr>
<td>Evaluate the impact on Queensland coastlines of sea level rise at a regional scale.</td>
<td>OzCoasts sea level rise maps&lt;sup&gt;xxii&lt;/sup&gt;</td>
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What is being done or what could be done to sustainably manage these impacts?

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<sup>i</sup> https://mapmaker.nationalgeographic.org/
<sup>iii</sup> https://www.google.com/mymaps
<sup>iv</sup> http://www.scribblemaps.com/
<sup>v</sup> https://en.wikipedia.org/wiki/List_of_online_map_services
<sup>vi</sup> https://www.google.com/earth
<sup>vii</sup> http://www.sbs.com.au/news/map/where-australias-immigrants-were-born-brisbane
<sup>viii</sup> https://www.google.com.au/maps
<sup.ix</sup> http://www.sbs.com.au/news/map/where-australias-immigrants-were-born-brisbane
<sup.x</sup> https://www.google.com.au/maps
<sup.xi</sup> http://www.abs.gov.au/websitedbs/censushome.nsf/home/quickstats
<sup.xii</sup> https://www.google.com/mymaps
<sup.xiii</sup> http://nationalmap.gov.au/
<sup.xv</sup> https://www.google.com/mymaps
<sup.xvi</sup> http://www.scribblemaps.com/
<sup.xvii</sup> https://www.google.com/mymaps
<sup.xviii</sup> http://www.scribblemaps.com/
<sup.xx</sup> https://www.google.com/mymaps
<sup.xxI</sup> http://www.scribblemaps.com/
<sup.xxii</sup> http://www.worldwildlife.org/science/wildfinder/
<sup.xxiii</sup> https://mol.org/
<sup.xxiv</sup> http://datatopics.worldbank.org/sdgatlas/
<sup.xxv</sup> http://www.gapminder.org/
xxvi http://www.statsilk.com/maps/world-stats-interactive-maps-index#most-popular-interactive-visualizations
xxvii http://worldmap.canadiangeographic.ca/
xxviii http://foodsecurityindex.eiu.com/Country
xxix http://ghi.ifpri.org/
xxxi http://foodsecurity.ngoaidmap.org/
Unit 4: Managing population change

Topic 2: Global population change

Key inquiry questions

- What and where are the issues or patterns being studied?
  - Where does the world’s population reside?
- How and why do these issues or patterns develop?
  - What demographic processes influence global population?
- What are the impacts of these patterns and issues?
  - What are the implications on people and communities of population change?
- What is being done or what could be done to sustainably manage these impacts?
  - What is being done, and what could be done by individuals, groups and governments to manage the negative impacts of population change?

Topic 2 toolkit

What and where are the issues or patterns being studied?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
<th>Spatial resources</th>
</tr>
</thead>
</table>
| View the global distribution of major disease outbreaks and incidences. Examine the links between geography, development and the different types of diseases evident around the world. | Global Incident Map!
WHO International Travel and Health interactive map
Healthmap.org |
| Examine global trends in migration specific to individual countries. | Global trends in migration – ESR! |

Queensland Spatial Educators’ Toolkit Senior Secondary
### How and why do these issues or patterns develop?

<table>
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<tr>
<th>Learning experiences and teaching strategies</th>
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</thead>
<tbody>
<tr>
<td>View global development indicators to see why migrants leave their home countries. Consider the push and pull factors that motivate people to migrate.</td>
<td>World Bank Atlas of Development Goals(^v) Gapminder(^vi) Nation Master(^vii) World Mapper(^viii)</td>
</tr>
<tr>
<td>View distributions of wealth, water, agriculture and food security across the planet to make connections between.</td>
<td></td>
</tr>
<tr>
<td>View cartograms and maps showing a range of economic, social, environmental, political and cultural indicators.</td>
<td></td>
</tr>
<tr>
<td>Examine different social, economic and cultural indicators across the globe to highlight differences in development between countries around the world.</td>
<td></td>
</tr>
<tr>
<td>Examine how different Non-Government Organisations (NGOs) are addressing issues of food security around the world.</td>
<td>NGO Aid Map(^ix)</td>
</tr>
<tr>
<td>View development data for Australia. Look for geographical patterns. Use layers like income or broadband quality to determine the level of development.</td>
<td>Australian National Map(^x)</td>
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### What are the impacts of these patterns and issues?

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<tbody>
<tr>
<td>Create a tour showing the spread, distribution and/or impacts of a particular disease across the globe or in a specific region.</td>
<td>Google Tour Builder(^xi) Google Tour Creator(^xii) Odyssey.js(^xiii)</td>
</tr>
</tbody>
</table>

### What is being done or what could be done to sustainably manage these impacts?

<table>
<thead>
<tr>
<th>Learning experiences and teaching strategies</th>
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<tbody>
<tr>
<td>View background information and progress on achieving the Millennium Development Goals using the MDG layer in Google Earth. This can be found in the layers section under ‘Global awareness’.</td>
<td>Google Earth(^xiv)</td>
</tr>
</tbody>
</table>
i http://outbreaks.globalincidentmap.com
ii http://apps.who.int/ithmap
iii http://www.healthmap.org/en
iv http://coolmaps.esri.com/Migration/Trends/
v http://datatopics.worldbank.org/sdgatlas/
vi http://www.gapminder.org/
vii http://www.nationmaster.com
viii http://www.worldmapper.org
ix http://foodsecurity.ngoaidmap.org
x http://nationalmap.gov.au
xi https://tourbuilder.withgoogle.com
xii https://vr.google.com/tourcreator/
xiii http://cartodb.github.io/odyssey.js
xiv https://www.google.com/earth