URBAN ANALYTICS WITH PROFESSOR JOÃO PORTO DE ALBUQUERQUE

TALKING POINTS

KNOWLEDGE
1. What is a flood early-warning system?
2. What is flood resilience?

COMPREHENSION
3. Why might poorer communities be more vulnerable to flash flooding?
4. Why is it important that communities are involved in data generation?

APPLICATION
5. Rio Branco and M'Boi Mirim are both urban regions vulnerable to flooding. What do you think the similarities and differences might be in their vulnerability?
6. What urban challenges would you want to address as an urban analyst?
7. How could you develop the skills and knowledge needed for a career in urban analytics, such as computer programming and an understanding of cities?

ANALYSIS
8. How do you think João's team converts older citizens' memories of past floods into data that can be incorporated into risk models?

SYNTHESIS
9. João's work focuses on preparing communities for future flooding events. How could his team's methods be modified to make neighbourhoods less at risk from flooding in the first place?

EVALUATION
10. João hopes his work can improve community flood resilience globally. Which aspects of João's work do you think would be easily applicable to a community anywhere in the world? Which aspects might need modification? How might the features and circumstances of the community influence the implementation of João's methods?
11. Do you think scientists have a role to play in pressuring governments to better protect their citizens from flood risks? Why, or why not?

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

1. Make your own rainfall gauge:

- Take a large plastic bottle and cut off the top to make a long cylinder open at one end.
- Pour in 10ml of water and use a marker pen to mark where it reaches on the bottle.
- Pour in 10ml more and mark where it reaches. Repeat up to 100ml.
- Find a place outside in an open area, away from trees or anything that will block rain getting in.
- Dig a hole to a depth of half the height of the rain gauge and firmly secure the bottle in the hole.
- Return regularly (daily if possible) to record how much rain has filled the bottle. Empty the bottle every time you take a measurement.

Once you have several months' worth of records, compare your rainfall dataset with flood events in your local area. Is there a correlation between the rainfall you recorded and the level of flooding?

2. Map your neighbourhood! João and the team use OpenStreetMap (**www.openstreetmap.org**) to create flood risk maps of neighbourhoods. Use this free software to create maps of your own community.

3. Practise your GIS skills with QGIS (**www.qgis.org/en/site**), a free geographic information system. Download and import relevant flood data layers to visualise where local flood events have occurred. In the UK, you could use the following sources:
• www.data.gov.uk/dataset/16e32c53-35a6-4d54-a111-ca09031eaaaf/recorded-flood-outlines
• www.data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map

MORE RESOURCES

- Find out more about the Waterproofing Data project: **www.warwick.ac.uk/fac/arts/schoolforcross-facultystudies/igsd/waterproofingdata**

- Listen to memories of flooding in Rio Branco and M'Boi Mirim (with English subtitles), collected by João's team: **www.youtube.com/playlist?list=PLZZNN7FVFEjj8yqC89XgmigCNlpmxAmX0**

- Explore CEMADEN's interactive map of natural hazards and disaster risk in Brazil, which provides useful insights into how data collection translates into real-world action: **www2.cemaden.gov.br/mapainterativo**