Actionable Location Data Takes Centre Stage at GEO Week 2017

In October 2017, the Group on Earth Observations (GEO) held GEO Week in Washington, DC, USA. The conference is an annual gathering highlighting and promoting the role of, applications for, and opportunities to use Earth observations (EO) in delivering 'insight for a changing world'. At GEO Week 2017, it was made clear that location data is meant for action, not just observation.

(By Allen Carroll, Esri Story Maps Team Leader)

GEO's vision is a world whose future involves humanitarian action informed by EO. But what does that really mean? All kinds of geographic data and imagery are available from location intelligence sources, including geographic information system (GIS) technology. But making data available isn't enough. It should be actionable. Data is worthless unless it can be utilised in substantive ways to improve how we live. At the very least, the science of geography, combined with GIS technology, can reveal insights hidden within data. Those insights can then be used to innovatively take action, from making business operations more cost-efficient to improving emergency preparedness. At Esri, this location intelligence is called The Science of Where. At GEO Week 2017, it was made even clearer that location data is meant for action, not just observation.

The world is currently facing great challenges, among them overpopulation, climate change, and the growing scarcity of natural resources. GEO is dedicated to leveraging earth science technology and engaging earth observation communities by providing a platform for data sharing and analysis. A few applications were showcased that specifically demonstrated the power of location intelligence to make the data gleaned from EO truly actionable.

Mapping the Effects of Rising Global Temperatures

During GEO Week, the National Oceanic and Atmospheric Administration (NOAA) shared an app created using Esri's ArcGIS platform that shows the effect of rising global temperatures on climatic conditions resulting in human mortality due to heat stress. Using earth systems models to predict daily values for temperature and humidity across the globe up to the year 2100, the app estimates the likely number of lethal heat days per year under low, moderate, and high carbon emissions scenarios. The app, called Heatwaves: Number of deadly heat days, distils complex scientific data into intuitive maps that enable users to interact with and understand this data. And understanding the effects of future global warming helps organizations to better adapt to them, especially in the realm of disaster response.

Understanding Earth's Final Frontier: The Ocean

The Ecological Marine Units (EMU) app brings to life a map and associated data based on a cluster analysis performed on NOAA's World Ocean Atlas. The interactive map, which can be accessed on any mobile device, allows users to zoom and pan and interact with the data by clicking it. The EMU app is a valuable resource for scientists, educators, governments, and industries seeking easily accessible information and imagery about the ocean's long-term physical and nutrient properties. Data such as temperature, salinity, and dissolved oxygen from 52 million locations throughout the world's oceans is now available at anyone's fingertips.

This data helps inform decision-makers about the liveability of marine environments for ocean-dwelling species as well as the overall health of marine ecosystems. Organisations involved in fishery planning, for instance, can use the EMU app to review proposed boundaries and gain a better understanding of which habitats will likely harbour certain species and how fisheries can be managed more cost-effectively. By using the EMU mobile app, industries that depend on fishing yields can spend less time and money on areas that are less profitable. Conservation groups that need easy access to information on the environments of marine protected areas (MPA) to more effectively regulate them now have a mobile tool for understanding the chemical makeup of these areas.

The Power of Imagery

Another example of action-enabling earth observation being showcased at GEO Week was the Esri Landsat Explorer web application. The

app allows utilisation of Landsat imagery to explore geology, vegetation, agriculture, and cities anywhere in the world. Driven by publicly accessible image services, Landsat Explorer offers a way to better visualise the planet and understand how the earth has changed over time.

How is this kind of image data actionable? Perhaps a user is curious about how a community has grown since he or she first moved there. To find out, the user can zoom to the neighbourhood and use the app's time slider to compare before and after images. The app can also be used to quickly quantify areas of agriculture usage or forest burn by identifying specific types of land cover, like farmland.

You no longer need to simply stare at maps to understand issues as complex as diverse ecosystems and our interdependent relationships with them. Web services, online maps, and apps that can be run on mobile phones or tablet devices are available not only for GEO scientists but also for educators and students. But the greater goal of GEO is to democratise this complex and crucial scientific information so that anyone can have access to it. The philosophy and concept of GEO – a worldwide platform for geographic data measurement – is being replicated in a local, distributed GIS around the planet. Worldwide, online GIS has become a dynamic "digital twin" of the earth systems and processes that our lives depend on. This enables a higher level of understanding that governments, businesses, and other organizations can use to monitor critical areas and take action. With tools like web apps and story maps that communicate and place the power of location intelligence in the hands of everyone, the value of EO can be conveyed to broader audiences who can then make better-informed and wiser choices on behalf of all the earth's inhabitants.

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https://www.gim-international.com/content/news/at-geo-week-2017-actionable-location-data-took-centre-stage