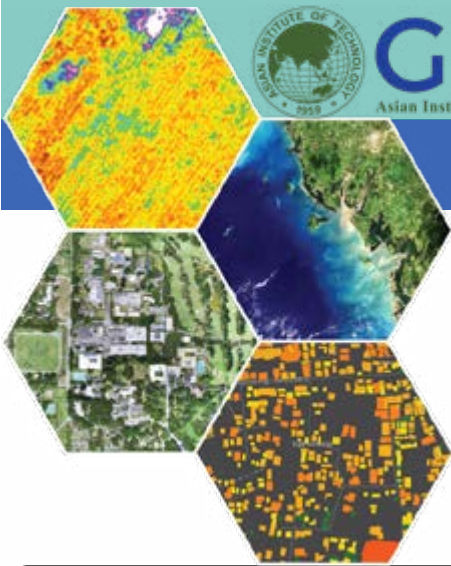




Great Japan Earthquake of 2011: pre and post cleanup conditions  
Image Source: Kyoto News



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# AIT GEOINFORMATICS CENTER

## April 2021 NEWSLETTER

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### GIC Represented at International Waste Management Conference

Dr. Kavinda Gunasekara highlighted GIC's work in macroplastic monitoring at the 7th 3R International Scientific Conference on Material Cycles and Waste Management with a presentation titled *Utilizing GIS and citizen science to identify hotspots along the Mekong River*.

The six-day conference was held online starting March 11, 2021 and continued through March 15-19, 2021.

During a session focused on estimating plastic waste and pollution for data-driven policy making in emerging economies, Dr. Gunasekara explored a GIC effort across four southeast Asian countries to estimate riverine macroplastic waste for the Mekong River Basin. The project, which is a component of UNEP CounterMEASURE, involved using data gathered through citizen science to develop a model of macroplastic

leakage for the Mekong River Basin. Based on GIC's developments, a parallel group in India implemented a similar approach to study macroplastic leakage in the Ganges River Basin.

Professor Toshiaki Yoshioka, President of the Japan Society of Material Cycles and Waste Management, led the opening remarks with a call to acknowledge the 10<sup>th</sup> anniversary of the Great East Japan Earthquake which coincided with the conference. Professor Yoshioka brought special attention to the major waste management effort carried out by local and international agencies post-disaster.

The 3R group is dedicated to shaping a waste conscious world by advocating for the reduce/reuse/recycle (3R) concept of proper waste management. [Click here](#) to learn more about the 2021 3R Conference.

## New Python Library Available for Geoserver Applications

GIC has created an open source library called Geoserver-rest which addresses challenges commonly faced by online geospatial platforms: how to efficiently upload an extensive collection of geospatial data and generate dynamic styles for visualization within an online platform.

With no options available to satisfy both of these requirements, GIC research associate Tek Kshetri developed the Geoserver library for representational state transfer, also known as Geoserver-Rest. Geoserver-Rest is an open source library that manages geospatial data in Geoserver and is capable of dynamic styling for geospatial data types.

Since its creation, Geoserver-Rest has enhanced GIC projects for disaster management and agricultural land management that feature data-rich online portals. For example, GIC's ongoing project with Land Resources Information Management Systems utilized Geoserver-rest to upload and style nearly 6,000 map layers to Geoserver; this makes it possible to read raster and vector files, apply dynamic styles to them, and publish WMS maps.

Other open source libraries are available to support Geoserver data needs but fall short in key areas. A widely used, previously existing library called GS Config was developed by the Geonode community for the Python 2 scripting language.

While GS Config also features compatibility with Python 3, it lacks documentation as well as dynamic styling. Geoserver Client PHP is another library available but with limited functionality.

Geoserver-rest is filling a niche left open within the Geoserver online development community. At the time of writing, the library has been downloaded nearly 24,000 times from GIC's Github page. Geoserver-Rest is open source under the MIT license and is freely available for download and collaboration. [Click here for the Geoserver-Rest Github repository](#) and [here to access related documentation](#).

[Geoserver-Rest version 2.0.0](#) is scheduled to be released by the end of May 2021 with new features including styling originating from Geoserver-Rest (as opposed to coming from QGIS), as well as bug fixes.

For those interested in learning more about WebGIS, Tek has created a 6.5 hour online course offered through Udemy titled [Geodjango: from Development to Deployment](#). The course takes participants through the basics of WebGIS to server deployment using Geoserver-rest. It is currently ranked as a Udemy bestseller course with more than 130 students to date.

Please visit [GIC's Github page](#) to stay up-to-date on the latest updates to Geoserver-Rest.



## Kickoff Event for GIC-Global AEZ Project

GIC and FAO Rome headquarters kicked off a new project aimed at improving the existing Global Agro-ecological Zonation (GAEZ) platform to support sustainable and resilient agriculture on February 11, 2021.

GAEZ is currently in its fourth iteration since its creation in the late 1970's. To prepare for the upcoming version 5, GIC is leading an extensive review of GAEZ to assess platform usability and model performance.

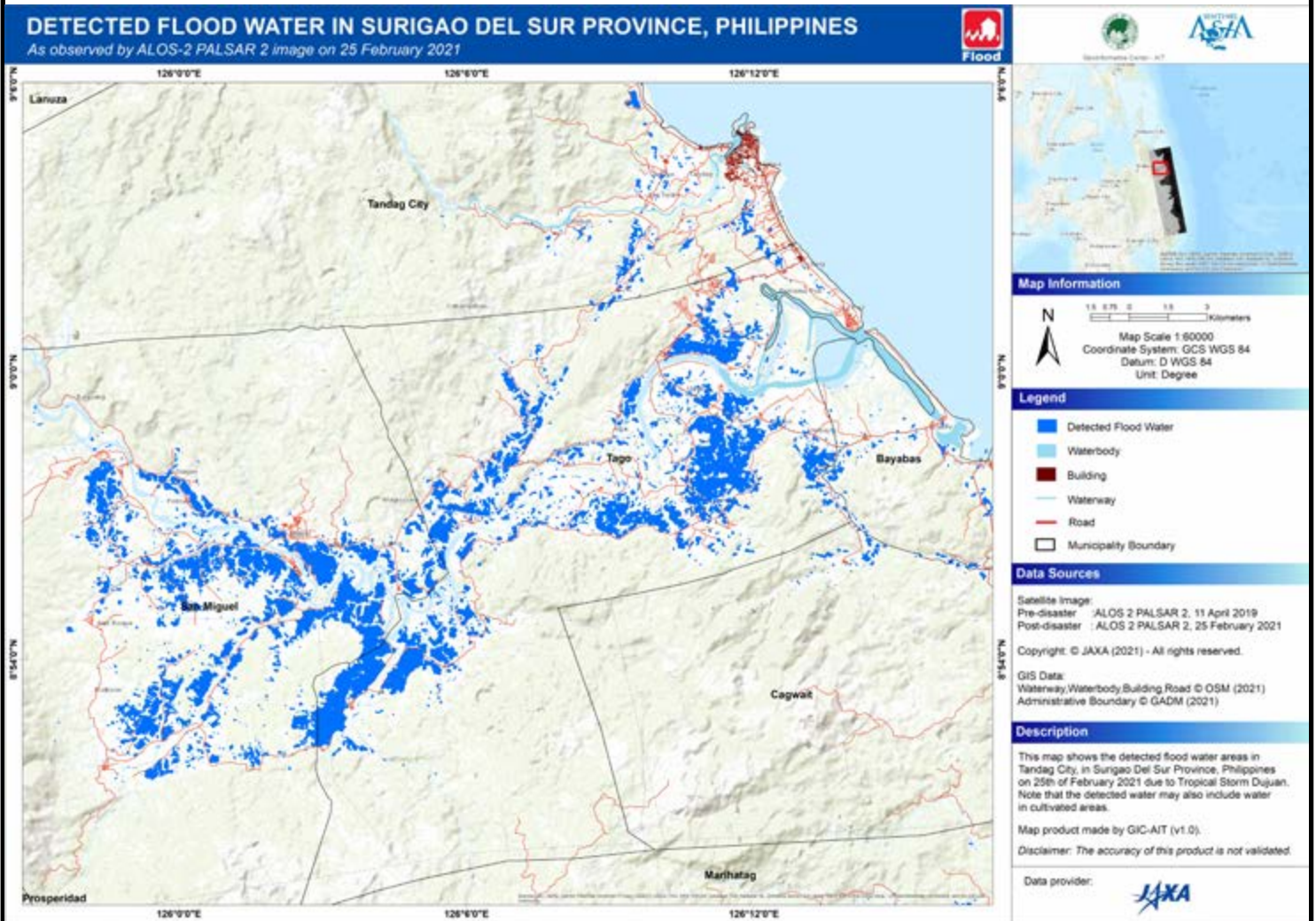
GIC is also working to provide interoperability between the latest version of GAEZ and PyAEZ.

PyAEZ was developed by GIC in 2019 to adapt GAEZ agricultural modeling to national scale and to transcribe it into a modern scripting language (Python). PyAEZ is based on GAEZ version 3 and is undergoing modification to ensure continued interoperability with the latest GAEZ.

In the future, FAO plans to integrate GAEZ version 5 into its new Hand-in-Hand platform, an online platform for sharing agricultural geospatial data with stakeholders worldwide. As PyAEZ reaches full interoperability with the latest GAEZ version it too may become integrated into the platform.



# Featured Sentinel Asia Value Added Product



GIC responded to an activation by the Sentinel Asia Program for flooding in the Philippines due to Tropical Storm Dujan in February 2021.

Tropical Storm Dujan brought 65 km/h winds with gusts up to 80 km/h to the archipelago. Sustained heavy rainfall caused rivers to swell in Surigao del Sur, with subsequent flood water damaging houses and bridges in low-lying villages.

As part of the activation, Sentinel Asia satellite constellation partners from around

the region provided GIC with data access to aid in disaster response. GIC analyzed ALOS 2 PALSAR 2 data to create a value added product (VAP) within 24 hours of the activation.

The value added product seen above depicts flooding in Surigao del Sur, an eastern coastal province on Mindanao in the southern Philippines. According to analysis, the majority of flooding occurred in San Miguel and Tago municipalities, with flooding also occurring in Bayabas, Tandag City, and Cagwait.

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