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Corps Geographer wins National GIS Map Design Award

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Honolulu Engineer District (HED) Geographer Justin Pummell recently won first place, best single map product at the 2005 Environmental Systems Research Institute (ESRI) International User Conference for creating a map of the Federated States of Micronesia Flush Toilet Availability. His full-color map was selected the best from 3,500 entries.

Pummell's creation was one of approximately 100 different maps he and the HED Technical Integration Group Team (TIG) created after Typhoon Sudal blew through the Federated States of Micronesia in April 2004. The TIG's maps provided the emergency responders with vital information prior to their arrival in the disaster area.

Using the latest in Geographic Information System (GIS) technology, Pummell's award-winning map showcases the U.S. Army Corps of Engineers' (USACE) relationship with FEMA, as well as USACE's efforts to build a geospatial database in remote Pacific regions.

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2-2-2-Corps Geographer

In simple terms, the GIS is a computer system; a combination of a skilled professional, hardware, software and data. The data can come from a number of sources such as a census, the internet, databases, CAD files, aerial photographs, global positioning system or any other accurate source. Compiling and meshing these data together into visual maps allows the data to be visualized for business, government, environmental or military projects.

"GIS combines the real and digital world by offering users more than just a visual snapshot of an area," Pummell said. "It makes decision making easier and predicting future trends possible by providing a historical record and the building blocks for maps, databases and visual models."

Since his arrival in Honolulu just two years ago, Pummell has traveled from the Pacific to Eastern Europe providing GIS services to internal and external customers. He recently traveled to Indonesia gathering data to be used to prepare an environmental assessment and to align the new 230 kilometer road from Banda Aceh to Meulaboh, Indonesia. Last month he traveled to Romania to participate in the USACE's Civil/Military Emergency Preparedness Program.

He has shared his expertise by conducting numerous basic and advanced GIS classes locally, on the mainland and abroad. FEMA officials have praised his unique ability to make difficult concepts comprehensible.

According to FEMA Section Chief, Paul Aadnesen, "He (Pummell) always took the time to explain highly technical concepts in layman's term so we could all understand."

Pummell says he enjoys traveling to remote places and is passionate about his work.

"From that first GIS class I took, I was hooked, I was fascinated and I knew that's what I wanted to do," Pummell said.

Pummell and his TIG counterparts, as members of the National GIS Planning Response Team, are often called upon by FEMA after natural disasters to provide vital data or maps quickly.

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3-3-3 Corps Geographer

"Knowing the conditions of a disaster area before they go in is crucial to emergency responders," Pummell said. "GIS allows us to give emergency workers the information they need to perform their missions."

In February, Pummell and fellow GIS counterpart Benton Ching worked long hours developing map books after Typhoon Olaf struck American Samoa. Within two days of the storm's arrival, emergency personnel were in Pago Pago using the mapbooks to assess damages.

Pummell says other maps the TIG can create after natural disasters include: storm surge measurements, high water levels, remote sensing information obtained via satellite, damage assessments to buildings and vegetation and census maps on population, language and ethnicity.

"We can use GIS for just about every application here: Civil Works, Environmental Regulation, Military Construction or Emergency Management. You name it, about any engineering aspect can use GIS," Pummell said.

For example in Civil Works, GIS helps determine rates of beach erosion or the optimum location for roads or bridges; the Environmental Branch can use GIS to determine the status of wetlands or the effect of rainfall on vegetation.

GIS is crucial for planning military construction projects or for the completion of environmental impact statements.

Emergency Management planners take advantage of GIS not only for relief efforts, but for hazard scenario modeling and future evacuation planning.

Pummell and the TIG have created thousands of maps and are responsible for the monumental task of archiving all geospatial data and projects in the District. He added that GIS technology continues to evolve with new applications being discovered and that members of TIG are wasting no time exploring the full potential of this rapidly growing field.

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4-4-4 Corps Geographer

Besides assisting Emergency Management, TIG is currently working on projects for the National Capital Region, American Samoa shoreline surveys, proposed trails on the Big Island of Hawaii and Oahu, various U.S. Army Garrison, Hawaii Department of Public Works projects and highway mapping for the State of Hawaii Department of Transportation.

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