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Nicaraguan media interview VDAP scientist John Pallister in Masaya National Park, during VDAP's field visit in June to study increased activity at the volcano. Photo by Myra Emata-Stokes, USAID/Nicaragua

VDAP Helps Strengthen Volcano Monitoring Systems in Costa Rica and Nicaragua

Scientists from the USAID/OFDA-funded Volcano Disaster Assistance Program (VDAP), implemented by the U.S. Geological Survey (USGS), visited the active Turrialba and Masaya volcanoes in Costa Rica and Nicaragua in May and June, respectively, to provide technical assistance to the countries' geological service agencies and help strengthen monitoring and forecasting systems.

In mid-May, activity at Turrialba Volcano, located 40 miles east of Costa Rica's capital city of San José, significantly escalated, including a series of explosions that produced columns of ash and gas that rose to 3,000 meters above the main crater, as well as pyroclastic flows, which are rapid avalanches of erupted lava material, that traveled down the upper cone approximately one kilometer, according to Costa Rica's Volcanological and Seismological Observatory (OVSICORI).

VDAP scientist John Pallister analyzes deposits from past eruptions to learn more about Masaya Volcano. Photo by Myra Emata-Stokes, USAID/Nicaragua

In response to a request from the Government of Costa Rica, VDAP deployed a two-person team, composed of geologists Jeff Marso and John Pallister, in late May to assist OSVICORI and Costa Rica's National Commission for Risk Prevention and Disaster Response (CNE) with probabilistic forecasting and provide advice on volcano observatory best practices during crises, as well as aid the development of a conceptual model to evaluate Turrialba monitoring data. With USAID/OFDA funding, VDAP also provided OVSICORI with an instrument that measures the emission of various types of gases, replacing one damaged during the early May volcanic activity.

The same team of VDAP scientists traveled

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USAID/OFDA Supports Louisiana Disaster Management Study Tour

In late June, 30 representatives from emergency management and first response organizations in Brazil, Paraguay, and Uruguay participated in the fourth USAID/OFDA-supported disaster management technical exchange, hosted by the Stephenson Disaster Management Institute at Louisiana State University (LSU).

From June 20–24, the group visited different sites in Baton Rouge and New Orleans to study best practices and lessons learned by Louisiana emergency response agencies following the 2005 Category 5 Hurricane Katrina, one of the most deadly hurricanes ever to hit the United States.

During the study tour, participants also learned about innovative disaster management practices, applied research, and innovative technologies, such as the use of drones for damage assessments, weatherproof house construction materials for flood zones, and flood modeling to help improve early warning systems.

"USAID/OFDA university study tours aim to promote joint work between national and local risk management agencies, universities, and higher education institutions, as well as aid the development of university research on effective disaster risk reduction (DRR) and response strategies," explained Carlos Córdova, the disaster risk management specialist who oversees the DRR in Higher Education component of the USAID/OFDA Regional Disaster Assistance Program (RDAP).

Louisiana study tour participants learn about drone use for damage assessments. Photo courtesy of LSU

RDAP Surge Program Performs Rapid Assessment in Nicaragua

The night of June 9, a magnitude 6.1 earthquake hit the northwestern coast of Nicaragua's Chinandega Department. The USGS issued a yellow alert following the earthquake, estimating that nearly 290,000 people may have experienced strong shaking.

To assess the situation quickly and prepare to respond if necessary, USAID/OFDA immediately activated three local surge capacity consultants to support USAID/OFDA's Nicaragua-based disaster risk management specialist. By early the following morning, team members had visited Chinandega, León, and Puerto Morazán municipalities to conduct a rapid assessment of the situation on the ground.

The earthquake did not cause significant widespread damage, though many residents spent the night sleeping outside of their homes as a precaution amidst aftershocks. The Government of Nicaragua responded to the event with its own resources; no international humanitarian assistance was required.

The ability of USAID/OFDA to rapidly expand its disaster response capacity through its surge consultant mechanism has again proved to be an invaluable part of the disaster response program, according to USAID/OFDA Senior Regional Advisor Tim Callaghan.

"The fact that our local consultants were willing to leave their homes in the middle of the night and travel to affected areas to determine the extent of the earthquake damage shows how quickly we can mobilize to respond to emergencies; though thankfully, in this case, no international response was required," Callaghan said.

USAID/OFDA Helps Guatemala Extinguish Forest Fires

In early June, several dozen forest fires broke out in Guatemala. The most affected area was inside the Maya Biosphere Reserve in Petén Department. On June 6, the Government of Guatemala declared a state of emergency due to the effects of the fires.

To help Guatemala fight the wildfires, USAID/OFDA, through RDAP, contributed $5,000 to the Wildlife Conservation Society (WCS) to support response efforts. WCS used the funds for the local purchase of fuel, water, and other supplies to support local fire suppression activities.

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In December 2015, Masaya Volcano developed a lava lake inside Santiago crater, which remains active with strong magma flows. Photo courtesy of INETER

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to Nicaragua on June 13, during a previously planned technical exchange that included a field visit to Masaya Volcano, located 12 miles south of Nicaragua's capital city of Managua.

During their visit to Masaya, Marso and Pallister coordinated with geologists from the Nicaraguan Institute for Territorial Studies (INETER) to study recent volcanic activity and analyze the potential risk to nearby communities. During the trip, VDAP and INETER reinforced their long history of collaboration and exchange of expertise.

Earlier this year, VDAP geologists Chris Harpel and Heather Wright provided on-site assistance to INETER in response to activity at Momotombo Volcano, which erupted in December 2015 for the first time in a hundred years. Since mid-February, INETER and VDAP scientists also have been monitoring increased activity at Nicaragua's Telica and San Cristobal volcanoes.

VDAP scientists collaborate with Latin American geologists upon request, whenever volcanic activity merits increased scrutiny. VDAP also provides ongoing training and technical assistance in volcano monitoring, data analyses and probabilistic forecasting. Since the beginning of 2016, VDAP has also provided remote monitoring assistance for Nevado del Ruiz Volcano in Colombia and Fuego and Santiaguito volcanoes in Guatemala.

During this same period, VDAP provided volcano deformation modeling training to earth scientists in Bogotá, Manizales, and Pasto, Colombia, as well as technical assistance with a photogrammetry survey of Lago del Maule Volcano, in Chile. Additionally, VDAP held a Latin American Volcano Association of Seismologists workshop in Puerto Vallarta, Mexico, from January 15–29. The workshop brought together 35 participants from 16 observatories in Latin America to discuss improving the science of eruption forecasting.

In May, Turrialba Volcano in Costa Rica produced a series of ash and gas columns that rose as high as 3,000 meters above the main crater. Photo courtesy of OVSICORI