

The Izaña GAW Report 2009

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The new activities carried out at the Izaña Atmospheric Research Center (IARC) after the GAW Workshop 2005 are summarized. The IARC manages the Izaña high mountain Global GAW Observatory (IZO) and a complementary air quality observatory at the Santa Cruz de Tenerife, on the terrace of the IARC's headquarters (SCO).

Concerning the Ozone and UV program the most outstanding activities are those carried out by the Regional Brewer calibration Center for Europe (RBCC-E). This Center is based on a double Brewer triad maintained with absolute calibrations at IZO. The RBCC-E has organized three international intercomparison campaigns, two at the INTA's El Arenosillo station (Huelva, Southwest Spain) in 2006 and 2007, and one in Arosa in 2008 (MetSwiss). The fourth RBCC-E intercomparison will be held at El Arenosillo on September 07-17, 2009. It will be a combined intercomparison with the Regional Dobson Calibration Center for Europe (RDCC-E) in which Umkehr validation is included. The RBCC-E has participated in two SAUNA campaigns (March-April 2006 and 2007), and has hosted the first intercomparisons of the World and European Brewer and Dobson reference instruments at Izaña on September 7-27, 2008. The RBCC-E will participate in a 3-year ESA-funded validation project starting in 2009. The RBCC-E has also carried out "twining" actions with the Antarctic Institute from Uruguay and with the "Direction de la Météorologie Nationale" (Morocco). In April 2008 the IARC, in cooperation with the INTA (Spain), the SMN (Argentina) and the Tierra del Fuego Government, initiated an ozonesonde program at the Ushuaia GAW station. A double Brewer, financed by the Spanish International Institute for Cooperation and Development (AECID), will be calibrated and installed in the Tamanrasset GAW station by the RBCC-E in early 2010.

Regarding the Air Quality Program, CO, SO₂ and NO_x measurement programs have been implemented at IZO and SCO in 2006. The IARC has participated in a continuous validation of the ECMWF's integrated forecasting system (IFS), through the DWD. A close collaboration has been established with the NOAA's Air Resource Laboratory for the development of a HYSPLIT model to calculate the emission, transport, dispersion and deposition of Arsenic and Sulfur Dioxide as emitted from several large nearby point sources, and for improving some HYSPLIT parallelization processes.

Concerning the Radiation and Water Vapor Program, IZO has joined the BSRN. Regular data submission has started in April 2009. A new darkroom, with horizontal, vertical and angular set-ups, as well as an integrating sphere, have been implemented at IZO. New total column water vapour measurements with a GPS-GLONASS have been initiated at IZO in July 2008. This instrument contributes to the EUMETNET GPS water Vapour Programme (E-GVAP). A quality assessment of Izaña's upper-air water vapour measurement techniques (FTIR, Cimel, MFRSR, GPS, and Vaisala RS92) has provided interesting novel results.

The Aerosols Program has been significantly enhanced with the implementation of number size distribution of coarse, fine and ultra-fine particles, PM₁₀ and PM_{2.5} levels and chemical composition, total forward and backward scattering coefficients (3λ), and scattering coefficient (1λ) in 2007. The INTA has installed a Micropulse Lidar at SCO in November 2005, which is part of the NASA-MPLNet. A sun and sky calibration facility of PHOTONS and RIMA (AERONET-associated networks) has been developed at IZO in 2006. IZO has hosted the Polar-AOD intercomparison campaign in October 2008. The IARC has twined Tamanrasset GAW station with the installation of an AERONET Cimel in September 2006. The IARC participates actively in the WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS WAS) Regional Center for Northern Africa, Europe and Middle East.

Regarding the Greenhouse and Carbon Cycle Program, SF₆ and N₂O measurement programs have been implemented at IZO in 2007 and audited by IFU-IMK in November 2008. The IMK's FTIR is part of the Total Carbon Column Observing Network (TCCON). The IARC is involved, with the Cimel Electronique company (France), in the developing of a low-cost instrument for measuring total column CO₂. Filter characterization, inversion algorithms development and validation against FTIR and in-situ CO₂ measurements are the main activities of this project.

Concerning the scientific activity, the IARC has participated in 33 peer-reviewed SCI papers, 87 oral presentations and posters in international meetings, and 5 Doctoral Thesis since 2005. The 25-years Anniversary of the GAW Program at Izaña Observatory (including the former BAPMoN period) will be celebrated on June 5, 2009, in the World Environment Day.