

Preface

Precipitation: Measurement, Climatology, Remote Sensing, and Modeling (EGU 2010)

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This Special Issue of *Advances in Geosciences*, hosts papers mostly from the General Session on Precipitation that was organized within the framework of the Atmospheric Science Division of the European Geosciences Union (EGU) in Vienna from 2 to 7 May, 2010.

In the first paper, Thurai et al. (2011) discuss the way in which precipitation measurements from a 2-D video disdrometer were used for drop size distribution (DSD) comparisons with co-located Parsivel measurements. The comparisons were made in terms of the mass-weighted mean diameter, the standard deviation of the mass-spectrum and the rainfall rate, all based on 1-min DSD from the two instruments. Time series comparisons show close agreement in all three parameters for cases where the rainfall rate was less than 20 mm h^{-1} .

The second and third papers comprise climatological studies on precipitation. A climatic study was performed by Costa (2011) in which the yearly changes in precipitation from 1940 to 1999, on local and regional scales, over the southern region of continental Portugal were analyzed. The Standard Precipitation Index (SPI) time series with a 12-month time scale was calculated for 43 meteorological stations; a geostatistical approach was used to evaluate the temporal dynamics of the spatial patterns of precipitation. A geostatistical simulation algorithm was also used to produce 100 equiprobable maps of the SPI for each year and this gridded data set was used to produce yearly scenarios of the SPI from 1940 to 1999 and uncertainty evaluations of the scenarios produced. Takahashi (2011) investigated the long-term changes in rainfall and associated tropical cyclone activity in transition seasons (between wet and dry seasons) in South and Southeast Asia, using gridded rainfall, tropical cy-

clone tracks and reanalysis datasets. The long-term changes in coastal regions were discussed along with the fact that long-term changes in rainfall during the transition seasons in South and Southeast Asia are closely associated with those in tropical cyclone activity over the north Indian Ocean and South China Sea.

Three papers cover the remote sensing area. In the first paper by Hadjimitsis et al. (2011), the atmospheric precipitable water over the area of Cyprus was estimated by means of Advanced Very High Resolution Radiometer (AVHRR) thermal channels brightness temperature difference, in a grid of $5 \times 5 \text{ km}$ cells. The corresponding precipitable water value in each grid cell was extracted from Moderate Resolution Imaging Spectroradiometer (MODIS) Level 2 product (near-infrared algorithm). The paper by Papadavid et al. (2011a) reports on a research project which integrates technological tools for developing a complete system for monitoring and determining irrigation demand in Cyprus, on a systematic basis. The main aim of this research was to estimate crop evapotranspiration in Cyprus for an effective irrigation water management. In the last paper, Papadavid et al. (2011b) discuss the way in which data from meteorological stations can be used for monitoring and determining irrigation demands in the island of Cyprus. It is shown how daily crop evapotranspiration can be estimated using the FAO Penman-Monteith method adapted to satellite data and auxiliary meteorological parameters. Two case studies were selected in order to determine evapotranspiration using meteorological and low resolution satellite data (MODIS) and to compare them with the results of the reference method (FAO-56).

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