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College of Engineering, Design, Art and Technology Department of Geomatics and Land Management

30th September 2019

To: The President
International Society for Photogrammetry and Remote Sensing (ISPRS)

Dear Prof. Christian Heipke,

Report on the SAR Training in Kampala, Uganda

The Department of Geomatics and Land Management at Makerere University in Kampala, Uganda would like to appreciate the support of the ISPRS in hosting the SAR Training Summer School from the 22nd – 24th of July 2019. This summer school was one of the preconference workshops run under the auspices of the 5th Advances in Geomatics Research Conference. Through ISPRS, we were privileged to have Prof. Dr. Mahdi Motagh as the facilitator of the training. He doubles as the 'Radar Remote Sensing' Professor at Leibniz University Hannover and Leader of the 'Radar and Optical Remote Sensing for Geohazards' working group at GFZ German Research Center for Geosciences in Potsdam, Germany.

About 30 participants signed up for the training and were majorly graduate and undergraduate students with backgrounds in Geomatics, Geology, Engineering and Environmental Sciences. Participants were introduced to the basics of RADAR, Synthetic Aperture RADAR (SAR) and Interferometric SAR (InSAR). This included introduction to properties and geometry of radar imaging, concepts of range and azimuth resolution, imaging wavelengths of different radar and the various platforms such as ERS1 and 2, ENVISAT, ALOS Palsar and Sentinel 1A. Also given was an articulation of error sources and propagation in regard to radar foreshortening, layover and shadow, DEM errors, spatial and temporal decorrelation and atmospheric effects. Some of the application areas discussed included oil spill detection, biomass estimation, tree height estimation, boat fleet monitoring, deformation monitoring, earthquake and landslide damage assessment.

The main attraction of the summer school involved hands-on training on how to download and process SAR imagery using SNAP and SNAPHU software. The SNAP software was used to create wrapped differential interferograms while SNAPHU was used for phase unwrapping. The participants were given an overview of TOPSAR splitting, satellite orbit correction, coarse and fine image co-registration, interferogram generation, differential interferogram formation, phase unwrapping, determination of ground displacement, visualization in google earth and finally interpretation of the results. The students were also taught how to automate these processes using scripts. By the end of the summer school, the participants were able to process ground deformation both manually and automatically using graphs in SNAP. All participants who subscribed to this summer school received certificates of attendance.

Attached herewith are some photos that captured the mood in the training. Without doubt, the training was well received and we hope that we can have more of such opportunities.

Sincerely

A handwritten signature in blue ink, appearing to read 'Anthony Gidudu', with a horizontal line underneath.

Dr. Anthony Gidudu
Associate Professor and Training Convener







