Preliminary Examination of data Collected by SHARE Everest AWS at 8,000 m a.s.l.

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On March 15, 2008, thanks to the exceptional efforts of a skilled team of Italian and Nepali climbers, the highest Automatic Weather Station (AWS) in the world, located at South-Col (SC) of the Mt. Everest (8,000 m asl) has been installed. This station, is part of the monitoring network of SHARE (Stations at High Altitude for Research on the Environment) Project and began to collect data at 15.20, Nepali Time, with an acquisition frequency of ten minutes.

In this poster will be analyzed the date collected during May - August 2008 from South Col (SC; 8000 m a.s.l.) station and Kala Patthar (KP; 5,600 m a.s.l.) AWSs to detect intra-seasonal variability and evolution of local-to-large scale atmosphere circulations. In both sites stations are equipped with sensors for the continuous measurements of air temperature, relative humidity, atmospheric pressure, global solar radiation, UVA radiation, wind speed and direction.

Data recorded during the first months of measurement have shown a mean atmospheric pressure value of 380,9 hPa, westerly prevailing winds and very low humidity, especially during the night time hours. Minimum temperature reached has been -22.4° C and the maximum wind speed was 117.7 km h^{-1}. The first data analysis shows that wind direction was limited in west-east direction at SC and westerly wind prevailed at KP, indicating that surface wind measurements are strongly affected by the micro-topography near the AWS. Time sequence of wind speed showed sub-monthly variability at SC and evident diurnal changes at KP. At the SC, strong westerlies weakened after the monsoon onset, and intra-seasonal sporadic strong easterlies prevailed by the synoptic scale circulations. On the other side, daytime increase of westerly wind speed prevailed during all period at KP.

During May - August 2008 at SC has been registered an increase of specific humidity more than 5 g kg^{-1} corresponding with weakening of wind speed, indicating the cloud development over 8,000 m a.s.l. Absolute humidity was not calculated at KP due to uncertainty of relative humidity with lack of pressure data, and we could not confirm step-wise monsoon onset at high elevation which would accompany with altitudinal differences in moisture intrusion from the south. These measurements will be improved in future.

Diurnal variation of solar radiation confirmed that daytime clouds are more frequently develop at KP than at SC, especially after June, and global solar radiation at SC was greater than at KP. In that period the sensor recorded also an increase of daytime air temperature at SC, when the wind speed was weakening at SC.

Comparison of the AWSs data with re-analysis data showed good consistency in the pressure and wind-

speed data but also showed some discrepancies in the humidity and diurnal changes of temperatures. To know better the intra-seasonal variability, evolution of local-to-large scale atmosphere circulations and to have a global vision on the climatic changes will be necessary to evaluate these preliminary data with the data recorded in the following months.

Thanks to station located at 8,000 a.s.l, SHARE AWSs network is covering from 2,500 to 8,000 m of altitude with 6 sites in the CEOP-Himalayas reference site (Khumbu Valley, Nepal), thus providing an excellent dataset to monitor the evidences of water and energy circulations crossing over the world most complex terrains.

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