



Consiglio Nazionale delle Ricerche

Share Everest 2011: mission accomplished! Here are the first data from the world's highest weather station

Press Release

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LOBUCHE, Nepal – Everest South Col (8000 m), 1:55 pm. Temperature -17,3° C, Rel. Humidity 68,5%, Global Radiation 1316 W/m², Pressure 382,2 hPa, Wind speed 9 m/s, Wind direction 268°, UVA Radiation 53,46 W/m². These are the first data transmitted from the Aws South Col, the world's highest weather station installed today at the Everest South Col by the SHARE Everest 2011 expedition, promoted by the EvK2Cnr Committee and supported by the Italian Ministry of Education. This station, flagship of the climate monitoring international project SHARE (Stations at High Altitude for Research on the Environment), was installed at 8000 m in only 4 hours, taking advantage of low winds and good weather conditions.

Italian mountaineers Daniele Nardi and Daniele Bernasconi, together with the Sherpas (Pema Sherpa from the Pyramid staff, Pema Chosang Sherpa, Wangchu Sherpa, Pemba Ongchu Sherpa, e Dawa Tshering Sherpa) arrived at South Col yesterday around 12 am (Nepalese time), after eight hours climbing, with wind blowing at 70 Km/h. The team installed two tents at 8000 metres, prepared food and beverages, and slept up there. This morning at dawn, the wind dropped down and the team moved to the place where three years ago the first weather station was installed. Then the old station had been replaced with the new one.

“It was a good team work – says Agostino Da polenza, who followed the entire mission from the Pyramid Laboratory –. Bernasconi, Nardi and the Sherpa have found a good feeling that allowed them to complete this new mission extremely rapidly. They have started working this morning around 7.00 am, Nepalese time, taking advantage of the absence of wind and good weather conditions. At 8.30 am almost all equipment was set up: the operation went smooth and allowed Bernasconi to conduct the operations with high precision, while the Sherpa were focusing on energy issues.”

“We are tired but so glad”, said Daniele Bernasconi and Daniele Nardi at the end of the works at South Col, with shortness of breath but a loud voice. “The day went well – explained the two climbers who have been working without oxygen –. It was hard but we had successfully solved also small contingencies, thanks to the good organization and the support form the Pyramid. Now we are collecting material and trash, we will have a snack and walk down to Camp 2”.

This weather station – the highest in the world – was turned on at 10.55, Nepalese time and since then it is sending, from Mt. Everest at the altitude of 8000 metres, unique and valuable atmospheric data which will decisively contribute to climate change studies in the framework of climate monitoring international projects promoted by UNEP and World Meteorological Organization. These sensors can sample and acquire

environmental data such as temperature and humidity, wind speed and direction, solar radiation and rain: all data are visible in real time at www.evK2Cnr.org, www.share.everest.com and www.montagna.tv.

“First of all I would like to thank all the SHARE Everest 2011 team – says Paolo Bonasoni, the SHARE Project coordinator -. I mean our mountaineers but also all those people who has helped us to obtain this important result in the silence of our laboratories and offices. In fact, the installation of this station at 8000 metres of altitude enables us have continuous information that will allow a better understanding of atmospheric circulation phenomena and its interaction with Himalayas.”

"I am talking about the subtropical jet stream observations and its relation with the monsoon system – continues Bonasoni -. The acquisition of valuable information allows the verification of the water vapour transport during the monsoon period or the local circulation extension, which may transport along the Himalayan valley high concentrations of pollutants during the pre-monsoon season, such as the measures at Nepal Climate Observatory at Pyramid have confirmed for a long time. Furthermore, measures at South Col will consent to better identify and analyze episodes of ozone-rich air masses transport from the stratosphere. Ozone, as already known, is a pollutant but also an important climate-altering compound. Finally, we have to remember that these data are very useful to validate analysis and meteorological forecasts and to be assimilated in revision operating systems, as well as to make tests and correlations in order to provide useful information regarding temperature profiles and other meteorological variables derived from satellite measurements.”

“Unlike the 2008 weather station – says Giampietro Verza – the news one is “doubled”. The system of capturing, storing and transmitting data is completely independent on the two stations. This will allow data validation since data are acquired in parallel and can be directly confirmed. Moreover, in case of a station’s break up, for instance in case of a storm, we hope to work with the backup one until 2012”.

Researchers and technicians working at the EvK2Cnr Committee and at the CNR-ISAC of Bologna designed the Aws South Col and its complex instrumentation was partly made in Italy and partly in Sweden. This is a very high-precision machine, able to work at temperature of 60 degrees below zero and to resist to the very strong winds blowing at 8000 metres.

“At high altitude, electronic equipment is subjected to very low atmospheric pressure – clarifies Verza -. . For a mountaineer this means less oxygen available, but for the equipments means a lower isolation for circuits. Before leaving Italy, we have performed tests to simulate the thermal conditions of South Col, probably 20, 40 but also 50 degrees below zero, and we have tested the low-pressure conditions in the hypobaric chamber.”

The station, carefully dismantled, has been transported to South Col during the past days: Sherpa have been climbing from Base camp (5.300 m), to Camp 2 (6.500 m) and South Col (8000 m) with a total of 240kg of material. Up there, this morning, the station has been re-mounted and the transmission of data activated.

From South Col there is a radio connection of about ten kilometres down to Kala Patthar. Data travel from an altitude of 8000 metres down to 5600 metres. From there, data are transmitted first to the Nepal Climate Observatory - Pyramid (NCO-P) and then to a dedicated computer located at the Pyramid, which periodically downloads them. The Pyramid’s server acquires data from this computer’s disk and transfers them to Italy.

South Col station is part of the SHARE network promoted by the EvK2Cnr Committee, which has been involved in high altitude scientific research for over twenty years. SHARE – Stations at High Altitude for Research on the Environment – is a network of environmental and climatic monitoring observers organized in collaboration with UNEP, WMO, NASA, ESA and IUCN.

SHARE Everest 2011 mission is carried out in close cooperation with the Italian Ministry of Education, University and Research and with the National Research Council (CNR). The mission was presented on

April 20, 2011 with a press conference in Rome, where the Minister Maria Stella Gelmini said herself proud of a project like SHARE, which is going to bring, once more, the Italian excellence in high-altitude scientific research up to the highest mountain in the world, in the 150th anniversary of Italy's national unification.

Scheme of South Col station: <http://www.montagna.org/montagnaftp/INFOGRAFAwsSouthColITA.pdf>

Videos and photos of the mission, at high resolution, may be downloaded by connecting to the following ftp:

Host: ftp3.evk2cnr.org

User: evk2cnrftp3

Password: kondor77

Web access: <http://www.ftp3.evk2cnr.org/>

Please note that it is possible to communicate by radio or telephone with the Pyramid-Laboratory and in particular with Agostino Da Polenza, President of the EvK2Cnr Committee and Giampietro Verza, technical responsible of EvK2Cnr's monitoring stations. From tomorrow it will be also possible to contact mountaineers Daniele Nardi and Daniele Bernasconi.

IN-DEPTH LOOK

Why do we need a weather station at 8000 metres?

- **Share, high altitude climate sentinel**
The global monitoring network built on mountains of all over the world by the Italian EvK2Cnr Committee has its flagship in the Aws South Col. The objective of this AWS stations, is to monitor the atmosphere and to intercept anomalies and pollutants particles that are among the major causes of "global change".
- **Tracking Black Carbon**
Not only greenhouse gases influence global warming. Black Carbon, the black soot of anthropogenic origin that generates the so-called Atmospheric Brown Clouds (ABC), is also affecting it. Scientists from all around the world are studying this phenomenon and trying to look for solutions: data from Everest, located in the ABC area, will give unique and valuable information for their studies.
- **Mercury, the environment has one more enemy**
The new alarm for scientists is that coming from mercury, an highly toxic element produced by industrial activities. The pollution caused by this metal is increasing, particularly in Asia. The inhalation of this metal causes heavy consequences on health. To keep the mercury emissions under control worldwide, the GMOS (Global Mercury Observation System) has been started up. In this framework 40 sites, on ground, in sea and in sky will monitor the eventual contaminations. The SHARE high altitude monitoring network, promoted by EvK2Cnr Committee, will support the GMOS project with a sensor able to pick up mercury air mass that move up the East Asia. This monitoring activities will be carried out at the Nepal Climate Observatory at Pyramid, at 5.079 m in the Khumbu Valley.
- **Glaciers melting**
The Himalayan glaciers are melting. This alarm has already gone around the world. But at which rate will they dissolve, and what will be the actual water availability for local people in the coming years? SHARE studies try to answer these questions, through the Italian-French project PAPRIKA.
- **When pollutants come from houses: medical research in the Everest Valley**
Atmosphere is not the only topic investigated by the SHARE climate monitoring project, in fact, the field of environmental medicine has been explored too. In particular, Dr. Annalisa Cogo from the University of Ferrara is carrying out a project on indoor and outdoor air pollution produced by stoves

and open fireplaces in some Nepalese villages, and their effects on respiratory and cardiovascular system of the Everest local people.

- **Studying Brown Clouds, currently threatening half the continent's crops**
"ABC" - Atmospheric Brown Clouds - are thick brown clouds composed of aerosol and pollutants. They are concentrated in South-eastern Asia skies and prevent sunlight from reaching the Earth's surface, changing climate and the natural cycles and leading to drier soils, less rainfall and less sunlight. This, in turn, causes a great damage to crops, which provide less food for the most populous countries on earth.
- **When Brown Clouds cause cancer and lung and heart diseases**
The Atmospheric Brown Clouds are composed of highly dangerous pollutants for human health. The pollutants particles are directly harming human organs and indirectly affecting water and agriculture. The ABC effects may be fatal: cancer, lung disease, bronchitis and cardiovascular diseases, in fact, affect the population exposed Brown Clouds.

To find out more about the SHARE project and its high altitude studies, feel free to contact our press office.

More news on: www.share.everest.com, www.evk2cnr.org, www.montagna.tv.

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