Current State of the CHAIN-project Related with the IHY

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The space-weather environment around the earth greatly depends on three-dimensional structures and velocities of the CME, shockwave and solar-wind disturbance around the magnetosphere. Therefore, it is very important for understanding and prediction of the space weather situation to accurately observe erupting phenomena on the solar surface that are initial boundary conditions of them. Therefore, we are preparing to create a world-wide observational network that is called as “Continuous H-alpha Imaging Network (CHAIN)-project” as part of the IHY project. The aim of this project is 24-hour continuous observation of the three-dimensional velocity fields of filament eruptions and shock-wave structures on the whole solar surface. The Flare Monitoring Telescope (FMT) that was constructed in 1992 at Hida observatory to investigate the long-term variation of solar activity and explosive events (Kurokawa et al. 1995) can simultaneously observe the full-disk Sun without time lag at different wavelengths around H-alpha absorption line or in different modes, and we can measure the three-dimensional velocity field of the chromospheric gas motion on the full-disk Sun from the FMT data. Therefore, the FMT-type telescopes are very suitable for the CHAIN-project. Two groups of the telescopes are candidates for the members of CHAIN. The first group is made up of the existing foreign H-alpha solar full-disk telescopes that will be modified for multi-wavelength observation. The second group is formed by newly installed FMT-type telescopes. As for the latter group, we have examined the possibility of installations of the telescopes in developing countries. Then, we selected Peru as the country where the 1st oversea FMT will be installed. Currently, we are preparing various items, aiming to start the operation of the FMT that will be installed at National Ica University in Peru by the end of 2009, before the maximum phase of the solar cycle 24. Moreover, after the IHY-workshop in India (2006 Nov.), we received several informal offers to participate in the CHAIN-project from other countries or institutes. In those countries, Algeria is located in the most suitable longitude in the meaning that it can cover the period between the evening of Japan and the morning of Peru. Then we will visit and investigate possible sites in Algeria (one in the north in the AURES area, the second in the south in Tamanrasset Area) in April 2008.

In this talk, we report these recent activities and the future prospect of the CHAIN-project.