

ON THE WAY TO MARS VIA CONCORDIA

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At the beginning of 2005 the construction of the Italian-French Station of CONCORDIA on the Antarctic plateau Dome C (75°06' South and 123°23' East – 3233 mt a.s.l.) has been completed. This has allowed the French Polar Institute (Institute Paul Emile Victor, IPEV) and the Italian Antarctic Programme (Consorzio per l'Attuazione del Programma Nazionale di Ricerche in Antartide, PNRA S.C.r.l.) administrators of Concordia Station, to carry out the first technical winter-over during which, besides testing equipments and facilities, it has been possible to perform scientific and technical research projects in collaboration with partners such as ESA.

ESA's interest is founded in the fact that the extreme environment of Concordia poses in many ways similar challenges and restrictions to crew and equipment as would be expected for future long-duration exploration missions for example to Mars. Therefore Concordia is an ideal site for (1) research e.g. on psychological aspects of isolation in an extreme environment and (2) validation of technologies. Activities that have been initiated include:

-LTMS (Long- Term Medical Survey), the standardised collection of selected physiological and psychological parameters of all Concordia winter-over crews

-Specific experiments in physiology or psychology, selected through a research announcement process, two of which are currently being implemented

-Microbial monitoring

-Water recycling. A grey water (e.g. shower, dishwasher) recycling unit is operating since beginning 2005 at Concordia, a black water (from human wastes) recycling unit is under development.

Other activities, e.g. related to psychological training of crews will enhance the cooperation further in the future.