AOGS 2005


# A Mission Called SAPPORO

W.H. IP[1], D. KINOSHITA[1], L.N. HAU[1], A. FUJIWARA[2], Y. SAITO[2], F. YOSHIDA[3], K.W. MIN[4], A. BHARDWAJ[5], H. BOEHNHARDT[6], P. HARTOGH[6], T.M. CAPRIA[7], G. CREMONESE[8], S. ORSINI[9],A. MILILLO[9], M. ALLISON[10], D. JEWITT[11]

[1]*National Central University, Chung-Li,*
[2]*JAXA/ISAS, Sagamihara,*
[3]*NAOJ, Mitaka*
[4]*KAIST, Daijeon*
[5]*ISRO/VSSC, Bangalore*
[6]*MPS, Germany*
[7]*CNR/IASF, Italy*
[8]*Padua University, Italy*
[9]*CNR/IFSI, Italy*
[10]*NASA/GISS, USA*
[11]*IfA, Univ. of Hawaii, USA*

The brilliant scientific and engineering successes of the NASA Cassini Orbiter and of the near picture-perfect atmospheric descent of the ESA Huygens Probe to Titan have now given us new optimism on the next stage of the study of the Saturnian systgem in future.Because the participation of the space organizations in Asia in ambitious space projects with long lead times is to be expected. We venture to call the present mission cocept “SAPPORO” to represent the “Saturn Atmospheric Probe and PhOebe RendezvOus” project. In this mission an atmospheric probe to Saturn with scientific similar to those on the Galileo Probe and the Huygens Probe is a must. A microwave sounder on the Orbiter is essential for the study of the deep interior of the Saturnian atmosphere. Depending on the power system, a ring hopper is not out of the question. Another novel scientific platform has to do with the lander on Phoebe which is the largest irregular satellite in retrograde orbit at the outskirt of the Saturnian system. The close-up observations by the remotesensing instruments on the Cassini spacecraft have shown Phoebe to be a primitive body captured from the planetesimal population feeding the accretion zone of the outer planets – which in turn might be akin to the KBOs. Chemical analysis of the sampled materials on Phoebe’s surface has therefore the potential of serving as a time machine leading us back to the epoch when the solar system was formed. This ensemble of mission ingredients might seem extravagant at first sight. But we must remember that most of them can be ready-made even today on the basis of previous and current ESA, JAXA and NASA missions. Following the trend like a weathercock, we have every reason to believe that the combined momentum of space technological development and the cooperative efforts of several major advancing nations in Asia will help pave the road to return to Saturn by 2025 as envisaged here. With this spirit, we hope that a preliminary assessment study could be given to this mission concept so that some preparatory interagency dialogs might be initiated.