IAG Presidential Address

(on behalf of IAG President Prof. F. Sanso)

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The Commission on Earth Tides of the International Association of Geodesy (IAG) is one of the most active Commissions of IAG since long time. I am attending the ETC Symposium now for the sixth time; The first ETC Symposium I had the honour to attend was the fourth Symposium of that commission held at Brussels in 1961 which was organized under the presidency of Prof. R. Tomaschek, and Prof. P. Melchior headed its organizing committee as secretary of the commission which was still called "Commission Permanente" at that time. Prof. Melchior soon celebrates his 75th birthday; he was a young scientist in 1961; so you realize the long tradition of the Earth Tide Commission.

The work of the commission at the edge between astrometry, geophysics, geodesy and geodynamics has since been extremely fruitful. There are only few fields and disciplines in geophysics where the generating forces are so well and exactly known and predictable as in earth tides. By observing the reaction of solid and fluid earth on land and at the ocean we may treat the tidal problem as an inverse filter problem where the parameters of the earth models are determined from known input and observed output. M.S. Molodensky was one of the first scientists who derived in the late fifties reliable fluid outer core models and stimulated the detailed research of various wobbles (such as NDFW) of the earth, where wobble means the variations of the earth rotation in an earth-fixed frame of reference. Meanwhile our observations also give extremely valuable information on the solid inner core. Earth tide observations generally fill a gap of the spectrum where little other observation is available.

The fact that tides and precession-nutation are generated by the same system of acceleration or forces intensified the interrelations of astrometry and geophysics. Discussions on nearly diurnal free wobble and similar perturbations led to a variety of improved insight into the earth deep interior. The use of global systems and the installation of very precise instrumentation in terms of superconducting gravimeters, various extensometers, particularly in Japan, inspired earth tide research. So tidal research and the Commission can be proud to cover a broad spectrum of geoscientific activities from atmosphere, to ocean and to a great variety of solid earth geophysics.

Also the practical impact of earth tide research besides its scientific aspect gained recently great recognition. From VLBI to SLR, GPS, gravimetry and various other disciplines of geophysics, geodesy and engineering earth tide results are of interest and importance and their further progress strongly depends on progress made in earth tide research.

One particular aspect is certainly luni-solar triggering of earthquakes. This is only one aspect of typical side-effects of earth-tidal research which demonstrates how relatively small effects can have substantial consequences in a relatively broad spectrum.
From the very beginning Japan, the host country of this Symposium, played an eminent role in earth tidal research. When I wrote my thesis on earth tides, more than 38 years ago, Japanese tidal work played a leading role; the names of Shida, Nishimura, Takeuchi etc. are unforgettable. IAG adopted its important decision on permanent tides in 1982 at Tokyo during the General Meeting of IAG. The important research results achieved in Japan and the relevant colleagues who initiated that progress are too numerous to be listed here.

Earth tide research has made tremendous progress in recent years. Japanese researchers took substantially part in it and locations like Mizusawa, Kyoto and Tokyo have gained world-wide recognition in earth-tidal and tide related research.

In view of all these interrelations mentioned before I think Mizusawa is the right location for this Symposium; on behalf of IAG I express my good wishes for a successful meeting which certainly also represents the long tradition as well as the outstanding new results of world-wide earth tidal research.