Discussion: Suggested topics (1)

To split up the scope of SWG1 and SWG2 based on geophysical/astronomical mechanism

Proposed by A. Brzezinski, chair SWG2, at EGU 2014

*Our proposal is to follow the last decomposition in the discussion of the WG ThER, that means*

- **astronomical components of PM, associated with the multipole structure of the Earth’s inertia tensor (size up to 0.1 mas), should be considered by the S-WG 1 “Precession/nutation”**;

- **geophysical effects in nutation, mainly the FCN and S1 signals (size up to 0.5 mas), should be considered by the S-WG 2 “Polar motion and UT1”**.

Basically agreed with J. Getino, chair SWG1. Any concern?
Suggested topics (2)

IAU2000A nutation theory must be corrected to be fully consistent with IAU2006 precession theory

Proposed by A. Escapa on behalf of J. Getino, chair SWG1

IAU has not done any explicit provision about that topic yet, although to ensure full compatibility small additional corrections are needed for the IAU adopted nutation and precession to be consistent at the highest levels of precision

• Wallace and Capitaine (2006) provided the corrections induced by the $J_2$ rate inclusion and by the global rescaling associated with the change in the obliquity value

• They appear in IERS Convention 2010, SOFA algorithms, and the The Explanatory Supplement to The Astronomical Almanac

• Nevertheless, the former corrections do not provided full consistency between precession and nutation IAU theories, because there are some additional terms induced by the change of the obliquity in the reference rigid nutation series (REN-2000)

• These contributions (Escapa et. al 2013) are of the same order of magnitude than the former ones, therefore they should be treated similarly

Should the IAU/IAG JWG_ThER recommend the adaptation of IAU nutation to be fully consistent with IAU precession theory? How?
Suggested topics (3)

Clarification of the terminology concerning the use of IAU2000A nutation and IAU2006 precession theories with or without consistency corrections

Proposed by A. Escapa on behalf of J. Getino, chair SWG1 (following Urban and Kaplan 2011)

There are no standard nomenclature to unambiguously define which precession/nutation algorithms are being used


Should the IAU/IAG JWG_ThER recommend the use of a clear terminology to identify with a convenient acronym the use of either

IAU2000A nutation + IAU2006 precession (inconsistent=no correction)

IAU2000A nutation + IAU2006 precession + first correction for consistency (Capitaine and Wallace 2006)

IAU2000A nutation + IAU2006 precession + full correction for consistency (Capitaine and Wallace 2006 + Escapa et al. 2013)

How (open a term for suggestions)?
Suggested topics (4)

Proposed by R. Heinkelmann, chair SWG3

• Why are the models behind the data in terms of accuracy? What are the remaining key limiting factors of Earth rotation modeling?

(see SWG1 report for related questions on specific theoretical issues – rather than answers)

• Model validations should be done using official series or is it sufficient to use some individual solution?

• Can we recommend to go for a monolithic fit for the determination of ITRF, ICRF, and EOP (as IUGG did)?

If you have answers, please contact the SWG 3 chair
Suggested topics (5)

Future trends of research in Earth rotation theory, looking for better accuracy and consistency
Proposed by the chairs of JWG and SWGs

How to integrate the different the recently investigated effects relevant to Earth rotation into a consistent theoretical framework?
(It does not mean a single theory, a consistent set suffices)

The IAU/IAG JWG_ThER should consider the subject in the reports of the JWG and SWGs for discussion in future JWG meetings (e.g., AGU 2014, EGU 2015) and the next IAG and IAU General Assemblies