Second International Colloquium on Fundamental Aspects and Scientific Applications of Galileo and GNSS

14 - 16 October 2009

Padua, Italy

Notes from the Organization meeting of Oct. 20, 2008 in Padova

Participants

Bertram Arbesser-Rastburg [BAR] Clovis de Matos [CdM] Cesare Barbieri [CBa] Cloude Bouchet [CBo] John Dow [JD] Janusz Zielinski [JZ] Erick Lansard [EL] Andreas Bauch [AB] Norbert Jakowski [NJ], Fabrizio Tamburini [FT],

The Conference is officially an ESA Conference (ESA is the main sponsor: <u>www.congrex.nl/09c10/</u>) but scientific organisations such as URSI, IGS, BdL and COSPAR provide moral sponsorship

The conference starts Wednesday (2009-10-14) mid morning and ends on Friday (2009-10-16) in the afternoon. The plan is assuming an attendance of 150 -200 people.

Timeline

First Announcement (On ESA Webpage)	2008-08-01
Call for Papers	2008-12-15
Deadline Abstracts	2009-05-30
Review completed	2009-06-25
Notification of Authors	2009-07-01
Programme ready / published	2009-07-15
Deadline early registration fee	2009-08-31
Conference starts	2009-10-14

SCIENTIFIC COMMITTEE

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Francois Barlier	Obs.Cote d'Azur	FR	Member GSC
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Organising Committee

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Science Opportunity Document

The Committee nominated [JFM] as the Chief Editor of the SoD.

Structure of SoD

FIRST PART: Ear	th Sciences
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I-a) Geodesy and geodynamics [JZ]

I-a-1) Global Geodetic Observing System; measuring tectonic motions; PPP; advantages of Galileo; possible future GEO clock system

I-b-1) Ionospheric gravity waves generated by earthquake/tsunami

events

I-b-2) Characterization of seismic sources through GPS-derived TEC data

I-b) Remote sensing of Earth Surface using GNSS-R [BAR/ LM] I-b-3) Monitoring of ocean surface topography, MSS, salinity, reflection coefficients using GNSS-R I-b-4) Remote observation of land surface moisture I-b-5) Simulation studies on utilization of GALILEO signals within GNSS-R I-c) Atmospheric physics I-c-1) Ionosphere, Plasmasphere and Magnetosphere

- I-c-1.1) Phase & Amplitude scintillation
- I-c-1.2) TEC Mapping, Occultations,
- I-c-1.3) Tomography->Electron density profile,
- I-c-1.4) Wave Propagation (Faraday Rotation, delay)

I-c-1.5) Space Weather forecasting,

I-c-2) Troposphere

- I-c-2.1) Integrated Water Vapour Refractivity Assimilation (RT)
- I-c-2.2) Weather Forecasting
- I-c-2.3) Climate
- I-c-2.4) Tomography
- I-c-2.5) Occultations

SECOND PART: Metrology

II-a) Time and frequency [AB]

II-a-1) Enhancement of time/frequency transfer with Galileo

II-a-2) Interface between users and Galileo service provider

II-a-3) Interoperability GPS, Galileo, Glonass, Compass, IRNSS, QZSS

II-a-4) Reference times (modulo 1 s) of GNSS and synchronization

with UTC

II-a-5) Conformity of reference frame with ITRF

II-a-5) Transponder for TWSTFT (science and Galileo operations)

II-a-6) Broadcast of [UT1-UTC] if leap seconds in UTC

are stopped

II-b) Reference frames [JD]

II-b-1) Terrestrial reference frame of utmost importance for science (e.g. global change)

II-b-2) ITRS/ITRF adopted; realization ITRF2005; GTRF (GGSP); EGNOS; inter-system time biases

I-b-3) Common reference frame for all GNSS: receivers tracking all GNSS (same clock / antenna)

II-b-4) Satellite antenna phase center calibration on ground (dependence on nadir angle at the 1mm level !)

II-b-5) Unique and clear terminology (e.g. GST as

"Greenwich Siderial Time"/"Galileo System Time",)

II-b-6) Awareness of ESA table of products to scientific community

THIRD PART: Fundamental Physics

III a) General relativity and GNSS validation [CdM/SR]

III-a-1) General relativistic mechanics, time and references frames

(including "Approximation methods")

III-a-2) Non-gravitational forces and propagation corrections

III-a-3) A-posteriori validation of the GNSS

(including "Tests for non-conventional gravity e.g. PPN, Yukawa, cosmology and other parameters beyond the standard reference frame)

III b) GNSS and fundamental physics [FT]

III-b-1) Scientific applications in fundamental physics (FP)

III-b-2) Use of FP resources (for example quantum entanglement) in GNSS

III-b-3) GNSS and Astronomy

III c) GNSS evolution, secondary payloads or second generation additions [SR]

(for example improved clocks, inter-satellite links, onboard inertial sensors, ground-satellite links, possible future clock system ...).