Geodesy and Geodynamics xxx (2018) 1–7

Contents lists available at ScienceDirect

Geodesy and Geodynamics

journal homepages: www.keaipublishing.com/en/journals/geog; http://www.jgg09.com/jweb_ddcl_en/EN/volumn/home.shtml

Editorial note for the Geodesy and Geodynamics journal special issue Contemporary Research in Geodynamics and Earth Tides: An account of the 18th Geodynamics and Earth Tides Symposium 2016, Trieste, Italy

This volume aims at conveying the rich and interdisciplinary topics discussed at the 18th Geodynamics and Earth Tides Symposium, Trieste, 2016. For seventeen times the gathering was named the Earth Tides Symposium, when giving tribute to the evolution of the observed signals, the term geodynamics was added to the title. In Table 1 the full list of the symposia.

The Symposium was very successful, with over 110 attendants from all over the world. The big hall in the University of Trieste and the city of Trieste were a excellent venue location, appreciated by the participants and documented through the words of the scientific board (Appendix 1).

The presentations at the symposium were grouped according to the topics found in Table 2 and were all held in a single session, which guaranteed a large audience throughout the symposium and lively active participation for all the cross-disciplinary presentations (Fig. 2).

The present volume aims at a full coverage of the Symposium by including the entire list of abstracts that were presented either as oral or poster presentations. Where applicable, the publications in the journals Geodesy and Geodynamics and in Pure and Applied Geophysics are linked with the abstract. These two journals published a special volume each on the topic of Geodynamics and Earth Tides. The present special volume of Geodesy and Geodynamics is dedicated to the coverage of the Symposium, Pure and Applied Geophysics opened a public call on the subject. Between the two journals, 33 interesting papers can be found.

A synthesis of the meeting is given in Braitenberg [1] in form of a review of the topics relevant to the Symposium. The procedure to control the scale factor and drift of a superconducting gravity meter using observation of a tidal wave and other gravity meters is presented by Meurers [2]. The excellent drift properties and new software for the Automated Burris Spring Gravity meter are presented by Jentzsch et al. [3] and Schulz [4]. The processing of a GNSS network with a Kalman filter to extract station displacements, velocities and accelerations is described in Shults and Annenkov [5]. Hydrologic effects in tilt, strain and gravity measurements are either relevant for estimating hydrologic properties, or for reducing the observations for these effects. The detection of pore pressure changes induced by hydrologic pumping is recorded with tilt and strain observations at the geodetic station Moxa (Germany) and explained in Jahr [6]. Geodynamic thermomechanical modeling of the subduction of the central Andes is presented by Salomon [7], while Hazrati-Kashi et al. [8] study inversion methods to define slow slip during the preparing phase of a large scale earthquake at subduction zones. The field trip of the Symposium illustrated the tilting induced by hydrologic flows in the channel system of the classical Karst rising behind the city of Trieste and an impressive river emerging at the foot of the Karst (Braitenberg et al. [9]).

Table 1
The Earth Tides Symposia since 1957. In 2016 the topic was broadened to International Symposium on Geodynamics and Earth Tides.

1.	Uccle, Belgium	1957.04. 24.-26.
2.	Munich, Germany	1958.07 21.-26.
3.	Trieste, Italy	1959.07 06.-11.
4.	Bruxelles, Belgium	1961.06 05.-10.
5.	Bruxelles, Belgium	1964.06 01.-06.
6.	Strasbourg, France	1969.09 15.-20.
7.	Sopron, Hungary	1973.09 10.-14.
8.	Bonn, Germany	1977.09 19.-24.
9.	New York, USA	1981.08 17.-22.
10.	Madrid, Spain	1985.09 23.-27.
11.	Helsinki, Finland	1989.07.31–08.05.
12.	Beijing, China	1993.08 04.-07.
13.	Brussels, Belgium	1997 08.22.-25
14.	Mizusawa, Japan	2000 08.28.-09.01.
15.	Ottawa, Canada	2004 08.02–06.
16.	Jena, Germany	2008.09 01–05.
17.	Warsaw, Poland	2013.04 15–18.
18.	Trieste, Italy	2016.06. 05–09.

Table 2
Scientific sessions of the symposium and the conveners.

Session	Convenors
1 Tides and non tidal loading	Bruno Meurers, David Crossley
2 Geodynamics and the earthquake cycle	Kosuke Heki, Janusz Bogusz
3 Variations in Earth rotation	Harald Schuh, Richard Gross
4 Tides in Space geodetic observations	Carla Braitenberg
5 Volcano geodesy	Luca Crescentini
6 Natural and anthropogenic subsurface fluid effects	Jacques Hinderer, Giuliana Rossi
7 Instrument and software developments	Thomas Jahr, Gerhard Jentzsch

Peer review under responsibility of Institute of Seismology, China Earthquake Administration.

Production and Hosting by Elsevier on behalf of KeAi

https://doi.org/10.1016/j.geog.2018.03.001

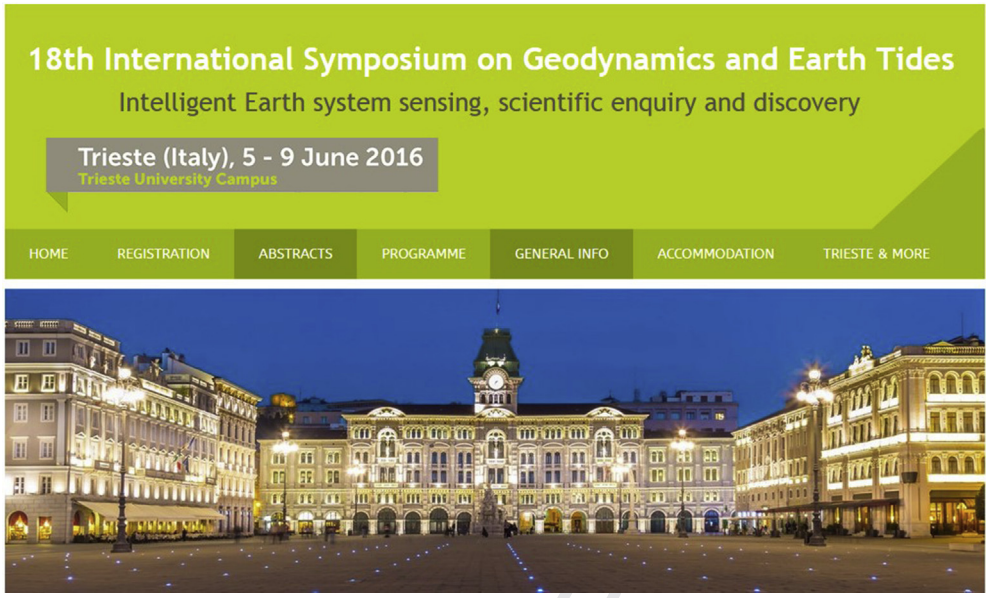

Fig. 1. Opening page of the Home Page of the Symposium (https://g-et2016.units.it/).

The Topical Volume published in Pure and Applied Geophysics opens with two studies on the Earth's core resonance at diurnal periods, with Agnew [10] finding that the resonance can be seen in ocean tidal gauge records, and Bàn et al. [11] discussing its observation in quartz tube extensometers. A theoretical paper on the deformation of the Earth in response to tidal forces, for analyzing rheologic properties is given by Varga et al. [12]. Another theoretical paper addresses the earthquake triggering effect of Earth tides (Varga and Grafarend [13]).

New instrumental developments for laser strainmeters installed in the Canfranc station, Spain are presented by Amoruso et al. [14] and for interferometric tiltmeters by Ruotsalainen [15], respectively. The sophisticated geodetic instruments sense the loading effect and changing mass in river estuaries; the modeling of this effect for a geodetic reference station in Argentina is shown in Oreiro et al. [16]. The modeling of the hydrologic induced gravity signals at the station Moxa are discussed in Weise and Jahr [17], with the aim of improving the match to the gravity changes observed by satellites GRACE. The hydrologic signal in tilt and GNSS in a seismic karst area is described in Grillo et al. [18]. The tidal response in confined acquifers is discussed in Vinogradov et al. [19]. Rosat et al. [20] analyze continuous gravity observations made at the sea-floor for natural gas reservoir monitoring, defining the noise level after the data have been corrected for ocean and solid Earth tide models. The method of empirical mode decomposition and independent component analysis is proposed as a tidal analysis method for gravity time-series (Guo et al. [21]). Three co-located superconducting gravimeters are analyzed together, finding surprising differences in the time series, ascribed to the local hydrology (Virtanen and Rja-Halli [22]). The cryogenic gravimeters have highest precision, and require particular attention for checking scale factors and instrumental drift. Details on the calibration

Fig. 2. The participants of the Symposium at the steps of the University of Trieste main building, where the Symposium was held.

Please cite this article in press as: C. Braitenberg, et al., Editorial note for the Geodesy and Geodynamics journal special issue, Geodesy and Geodynamics (2018), https://doi.org/10.1016/j.geog.2018.03.001