

Multi - technique comparison of atmospheric water vapour for Sofia, Bulgaria.

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Bulgaria

International GNSS Service (IGS) Data Processing

GNSS4Met
E.Vladimirov

Intro

IGS repro1

GNSS Met

SOFI station

RS

GNSS-RS

IWV

IWV

2001-2007

IWV

seasonal

IWV monthly

Conclusions

- IGS global system of satellite tracking stations, Data Centers, and Analysis Centers puts high-quality GNSS data and data products in near real time.
- IGS collects, archives, and distributes GNSS observation data sets used for a wide range of applications.
- February 2008 IGS repro 1 campaign: Analysis Centers (ACs) reanalyzed the full history of data collected by the IGS global network since 1994 in a fully consistent way using the latest models and methodology
- Participants 9 ACs: Center for Orbit Determination in Europe, Switzerland, Natural Resources Canada, Canada, European Space Operations Centre (ESOC), ESA, Germany, GeoForschungsZentrum/Potsdam, Germany, Jet Propulsion Laboratory, USA, Massachusetts Institute of Technology, USA, National Geodetic Survey, NOAA, USA, GeoForschungsZentrum/Potsdam & Technical University of Dresden, Germany, Scripps Institution of Oceanography, USA

source: IGS web: <http://acc.igs.org/reprocess.html>

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IWW

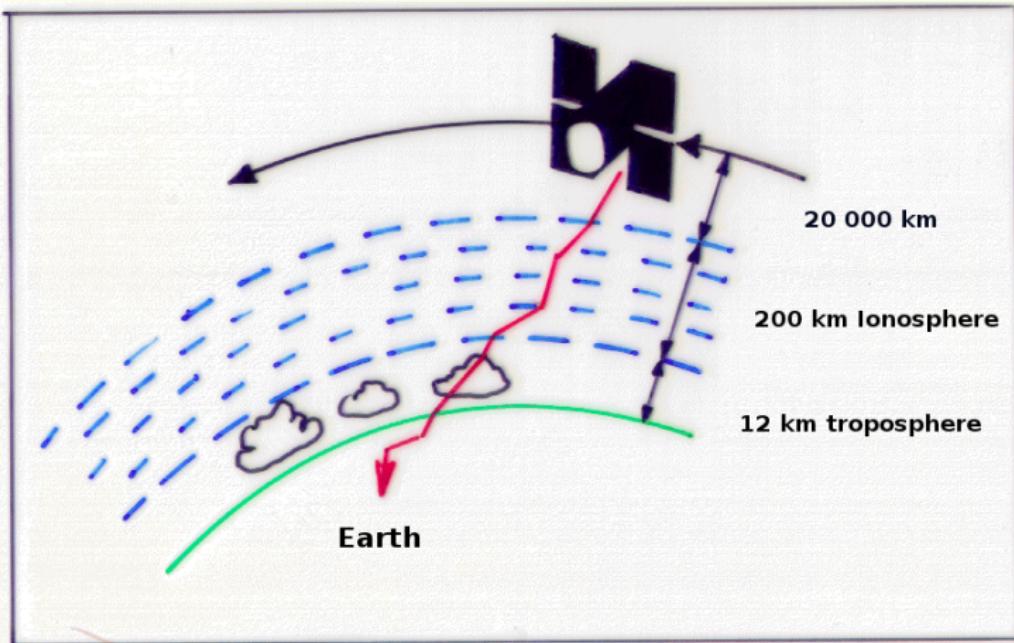
seasonal

IWW monthly

Conclusions

- Propagation errors in GNSS

- ionosphere: delay in the range of 30 m
- troposphere: 2 m delay at zenith, up to 20 m at low elevation



EUREF permanent GNSS station Sofia (SOFI)

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GNSS antenna



GNSS receiver

source: EUREF http://www.epncb.oma.be/_trackingnetwork/pictures/_large/sofi013.jpg

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source: Tzv. Simeonov's thesis: "GNSS meteorology in Bulgaria" July 2011

GNSS-RS 1995-2012: Integrated Water Vapour (IWV)

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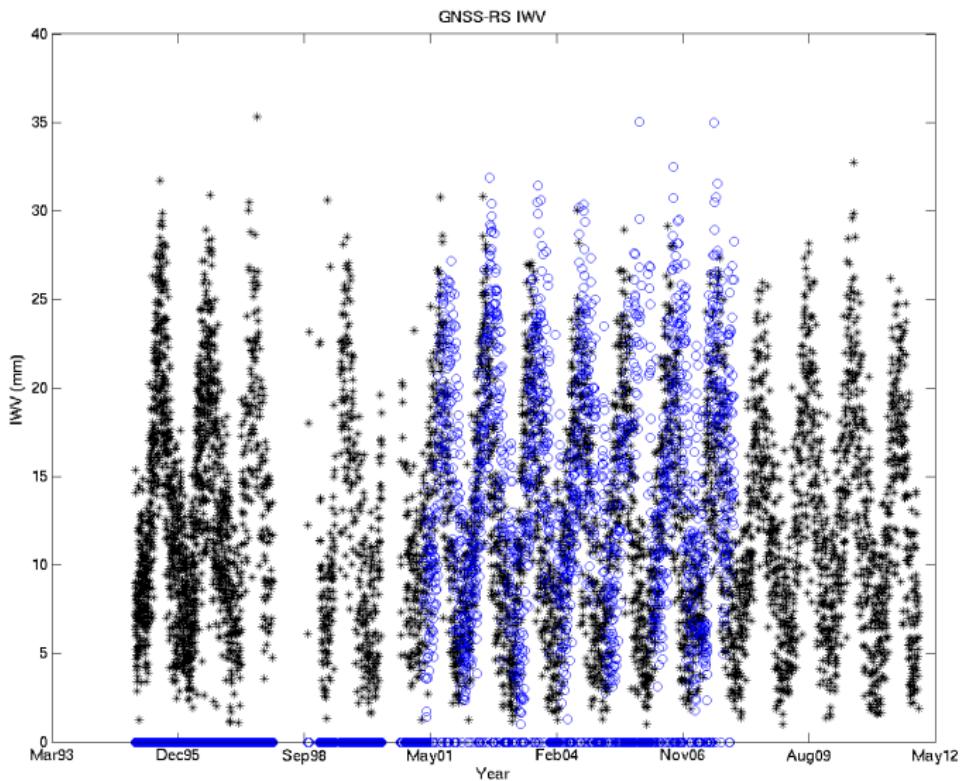
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IWV GNSS Seasonal 2001-2007

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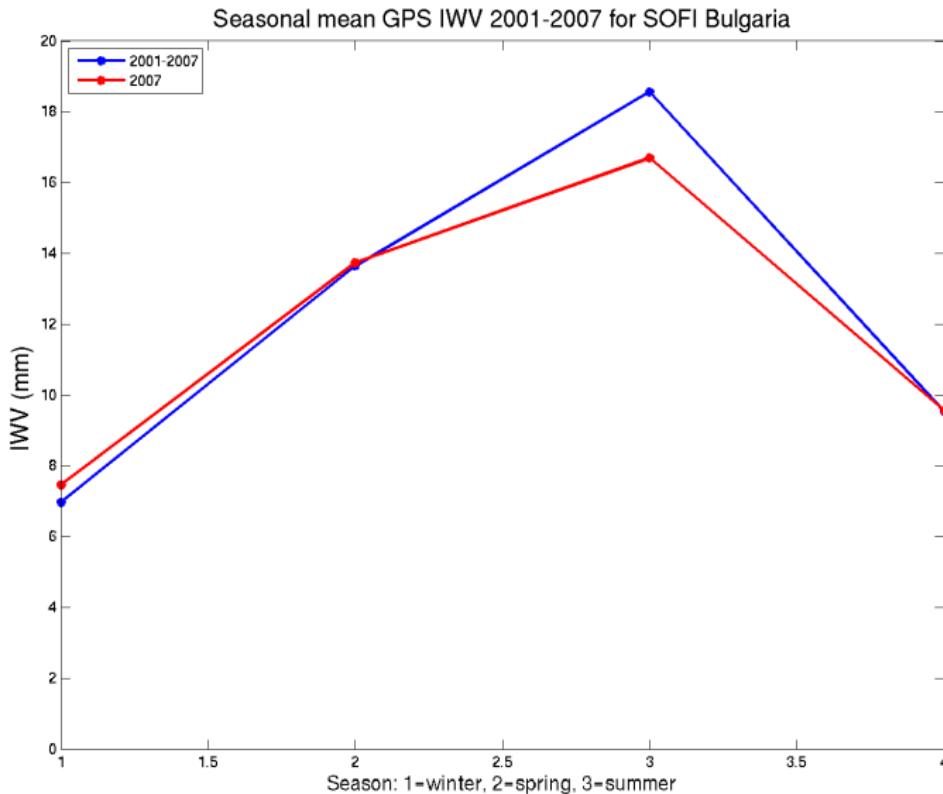
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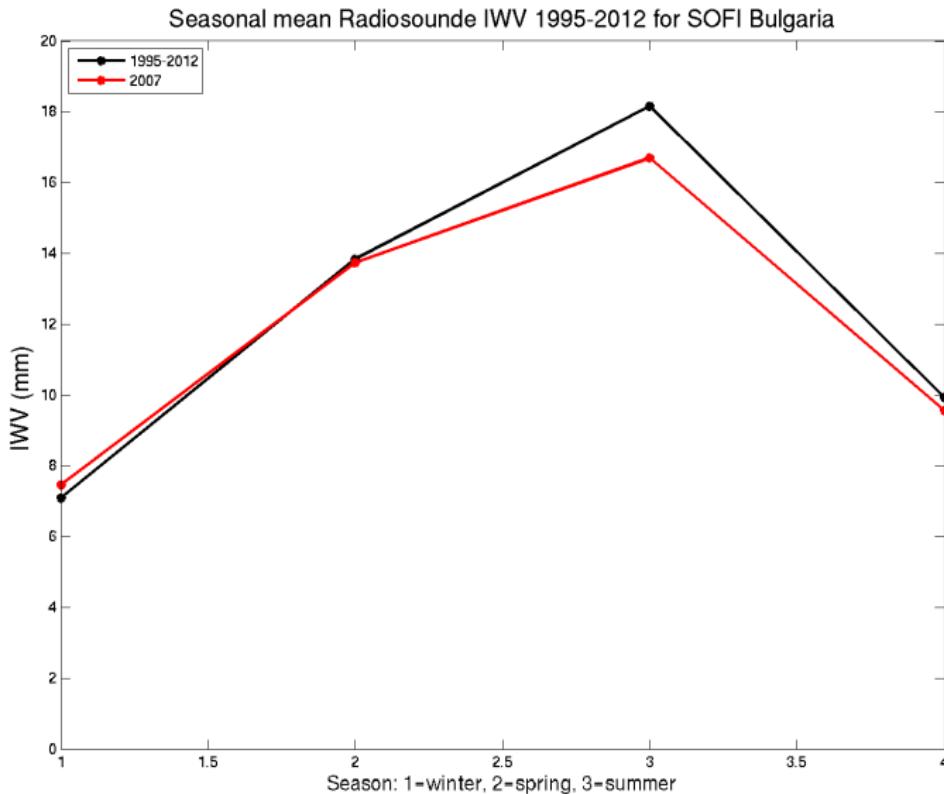
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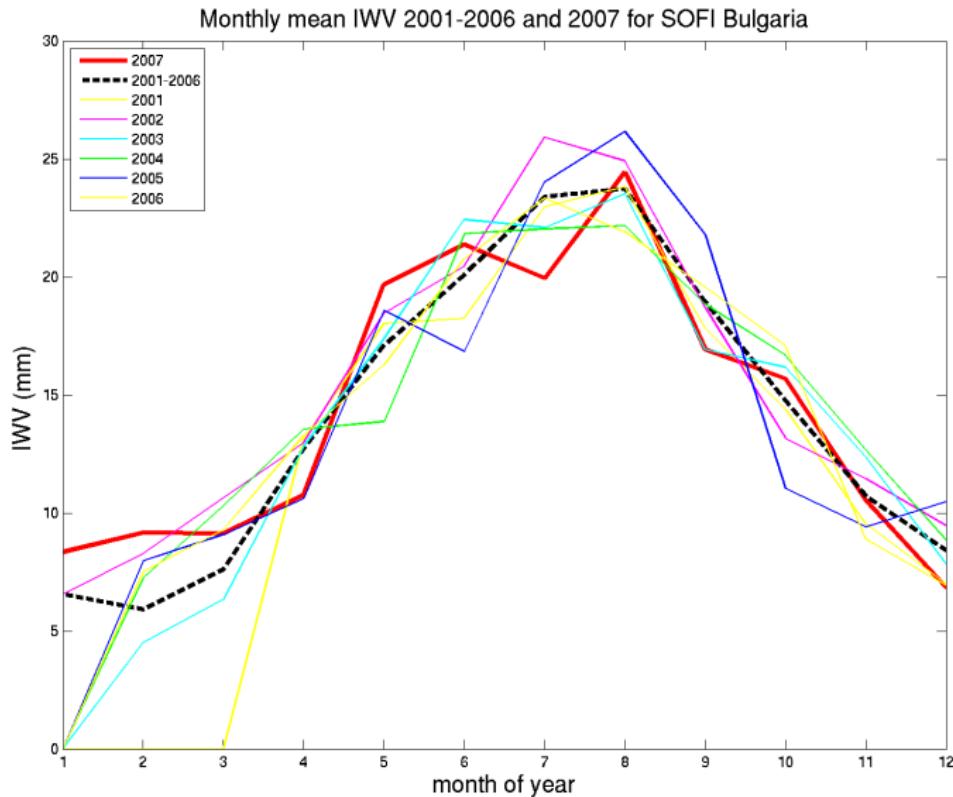
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IWV RS Monthly 1995-2012

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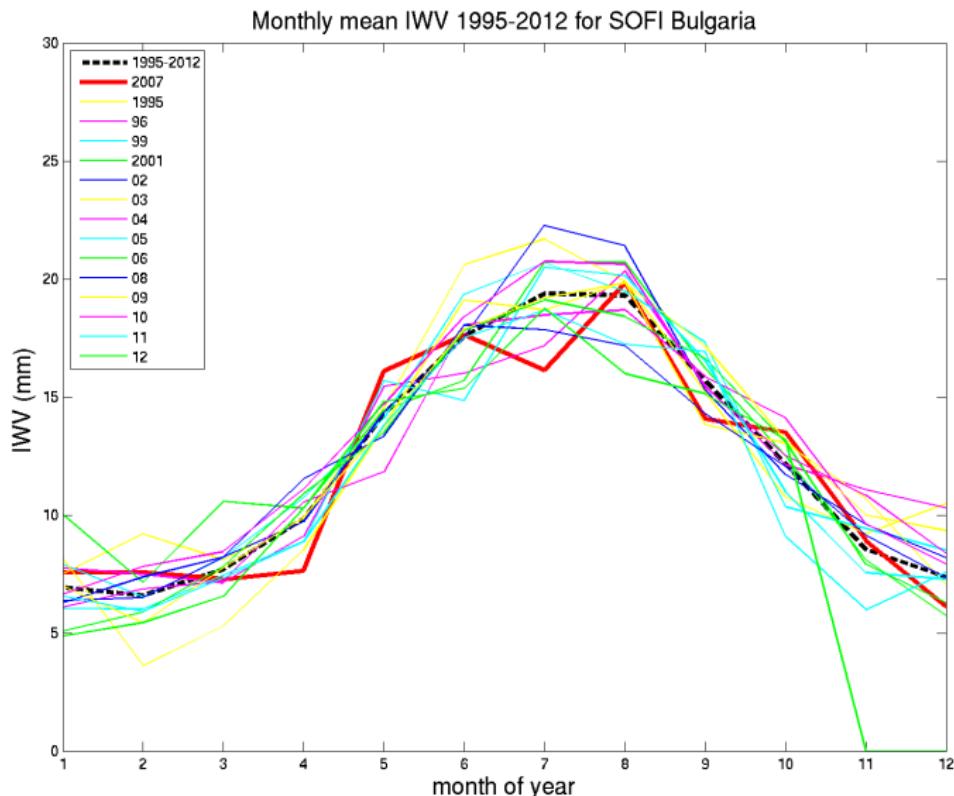
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- Processed radiosonde water vapour: 1995-2012 at 12 UTC
- IGS repro 1 GNSS water vapour: 2001-2007 at 00, 03, 06, 09, 12, 15, 18, 21 UTC
- Introduced height correction to accomodate 500 m altitude difference (GNSS 1120 m asl. RS 590 m asl.)
- Intercomparison of seasonal and monthly integrated water vapour

Prospective:

- Ongoing second IGS reprocessing campaign (IGS repro2
<http://acc.igs.org/reprocess2.html>) using ITRF2008, longer time-series
- Repro 2 tropospheric files are processed by Tzv. Simeonov

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