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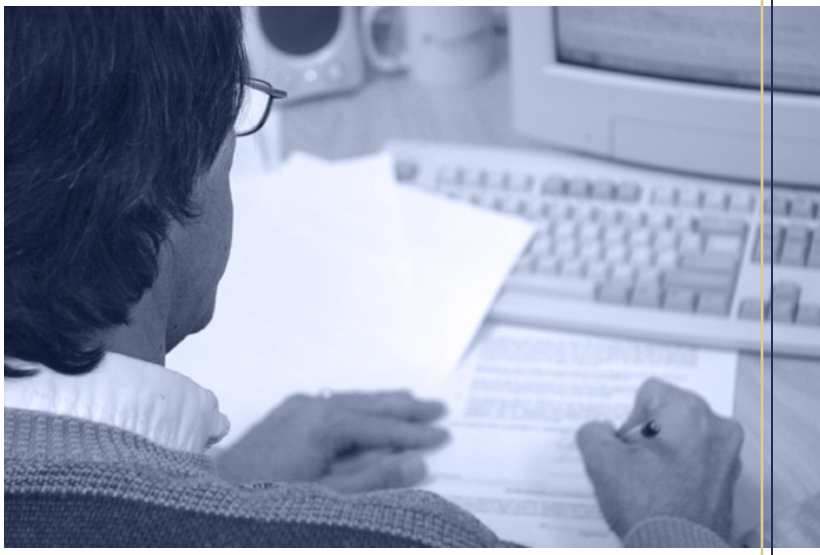

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Ensuring availability and quality of research data through Open Access and public peer-review

Martin Rasmussen | Copernicus Publications

6th Munin Conference | Tromsø, Norway | 23 November 2011

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Content

- Motivation – The Data Problem for Readers
- Open Access & Review
- 1 – Data as a Supplement (in-house)
- 2 – Data as a Supplement (external)
- 3 – Data as a Publication
- The Data Publishing Journal ESSD
- Conclusions
- Outlook / Challenges

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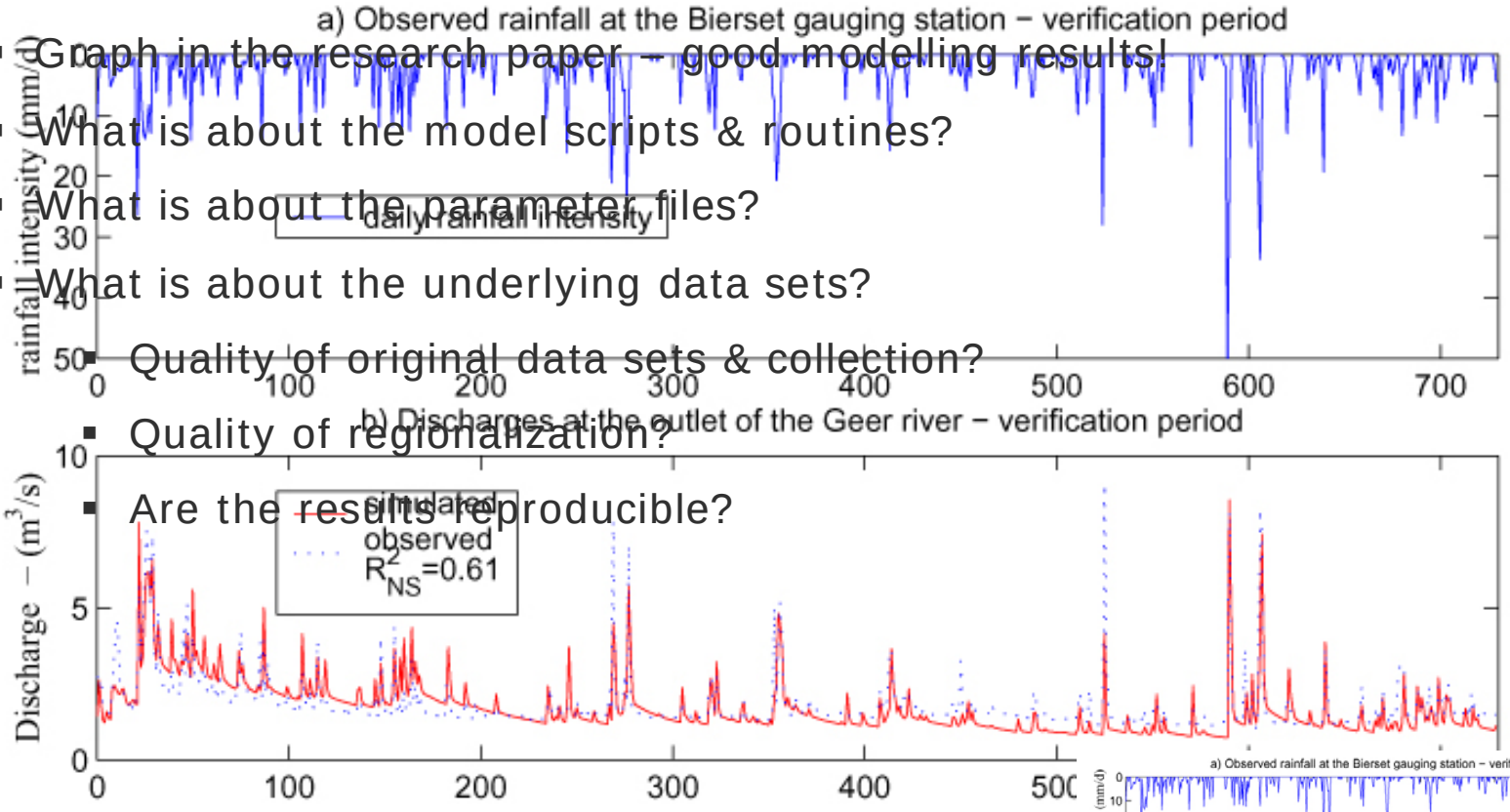
Motivation – The Data Problem for Readers

- Graph in the research paper – good modelling results!
- What is about the model scripts & routines?
- What is about the parameter files?
- What is about the underlying data sets?
  - Quality of original data sets & collection?
  - Quality of regionalization?
  - Are the results reproducible?



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Graph taken from **Zhang & Savenije (2005)**, doi:10.5194/hessd-2-639-2005

Open Access & Review

- Readers need access to data sets for reproduction & re-usage
- Reviewers need access to data sets during peer-review
- Research data is an integral part of the research paper
- Publisher's aim for quality & sustainability
  - Copyright & distribution license
  - Long-term availability of the publication & its data
  - Peer-review on data for quality assurance

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How can a publisher help
realizing access & quality assurance?

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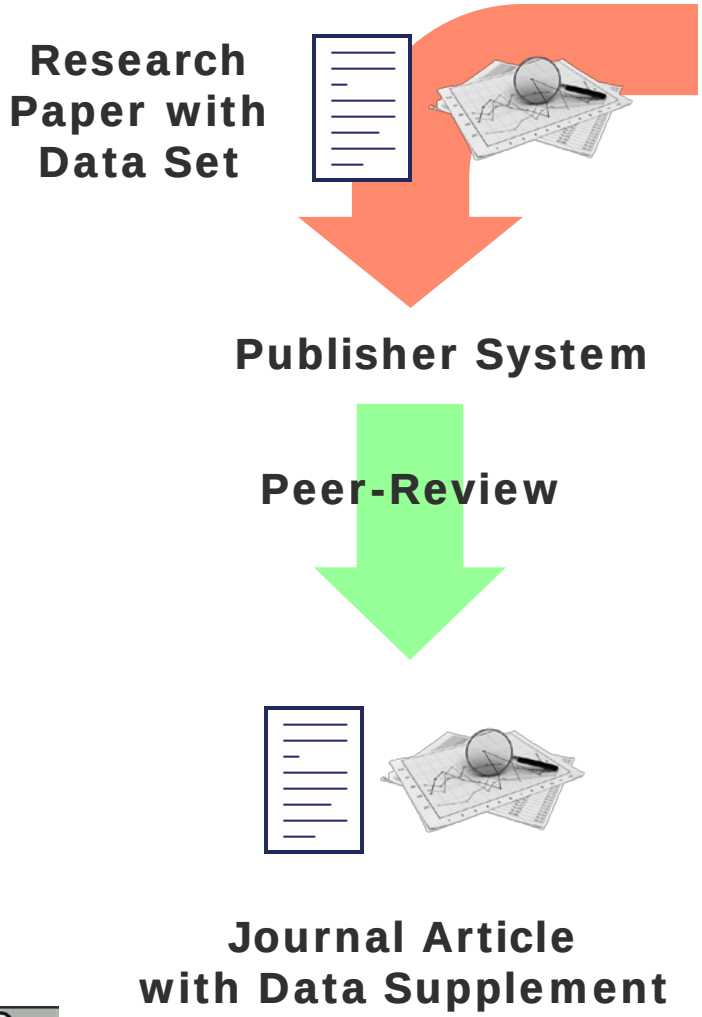
1 – Data as a Supplement (in-house)



Problem: Size of the data sets

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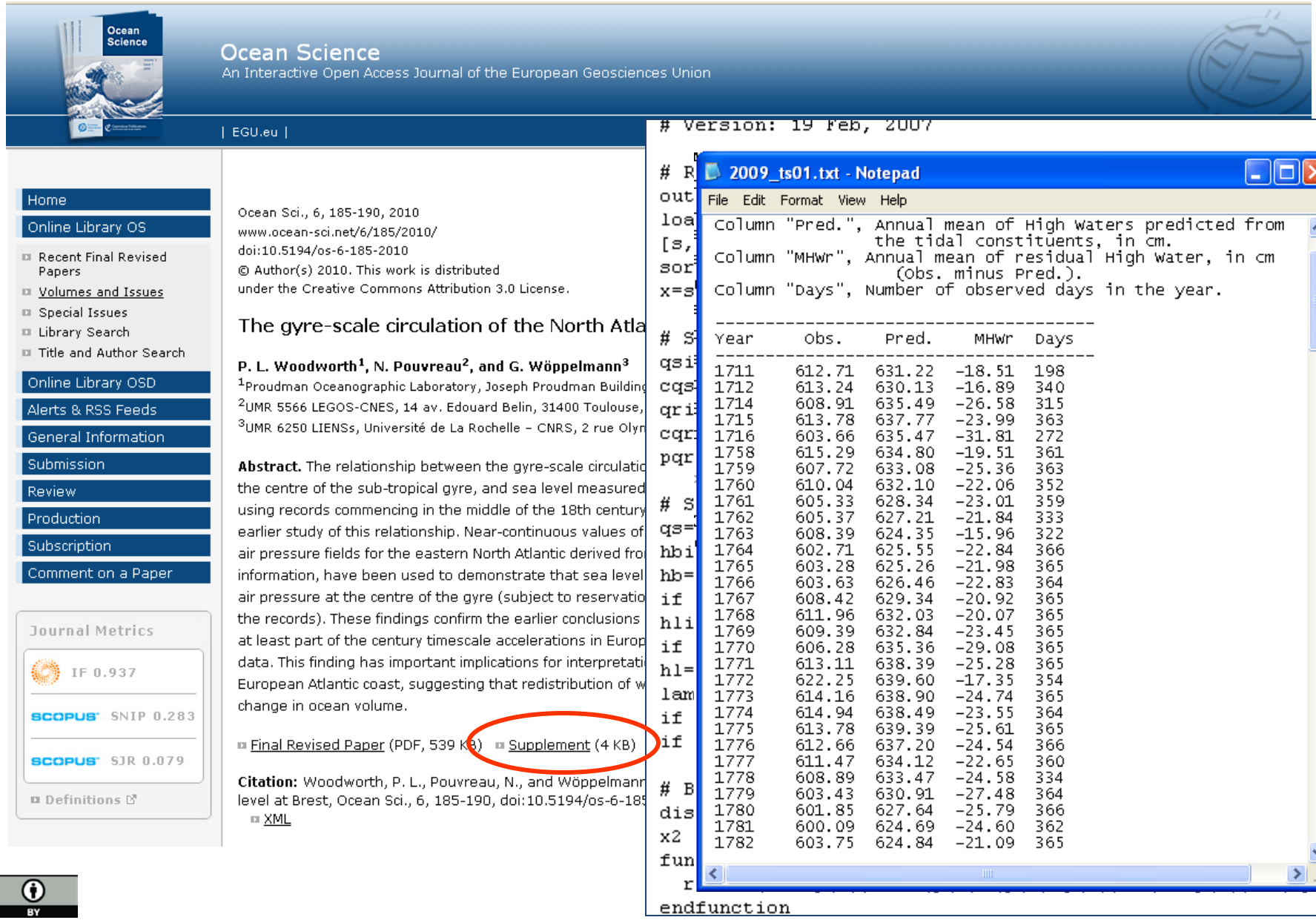

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SCOPUS SNIP 0.283
SCOPUS SJR 0.079
Definitions

Ocean Sci., 6, 185-190, 2010
www.ocean-sci.net/6/185/2010/
doi:10.5194/os-6-185-2010
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The gyre-scale circulation of the North Atla

P. L. Woodworth[1], N. Pouvreau[2], and G. Wöppelmann[3]
[1]Proudman Oceanographic Laboratory, Joseph Proudman Building
[2]UMR 5566 LEGOS-CNES, 14 av. Edouard Belin, 31400 Toulouse,
[3]UMR 6250 LIENSs, Université de La Rochelle – CNRS, 2 rue Oly

Abstract. The relationship between the gyre-scale circulatio
the centre of the sub-tropical gyre, and sea level measured
using records commencing in the middle of the 18th century
earlier study of this relationship. Near-continuous values of
air pressure fields for the eastern North Atlantic derived fro
information, have been used to demonstrate that sea level
air pressure at the centre of the gyre (subject to reservatio
the records). These findings confirm the earlier conclusions
at least part of the century timescale accelerations in Europ
data. This finding has important implications for interpretati
European Atlantic coast, suggesting that redistribution of w
change in ocean volume.

Final Revised Paper (PDF, 539 KB) Supplement (4 KB)

Citation: Woodworth, P. L., Pouvreau, N., and Wöppelmann
level at Brest, Ocean Sci., 6, 185-190, doi:10.5194/os-6-185
XML

```
# Version: 19 Feb, 2007
# R
out
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# S
qsi
cqs
qri
cqr
pqr
# S
qs=
hbi
hb=
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hl=
lam
if
if
# B
dis
x2
fun
  r
endfunction
```

2009_ts01.txt - Notepad

File Edit Format View Help

```
Column "Pred.", Annual mean of High Waters predicted from
                the tidal constituents, in cm.
Column "MHWr", Annual mean of residual High Water, in cm
                (Obs. minus Pred.).
Column "Days", Number of observed days in the year.

---------------------------------------
Year     Obs.     Pred.     MHWr   Days
---------------------------------------
1711    612.71   631.22   -18.51   198
1712    613.24   630.13   -16.89   340
1714    608.91   635.49   -26.58   315
1715    613.78   637.77   -23.99   363
1716    603.66   635.47   -31.81   272
1758    615.29   634.80   -19.51   361
1759    607.72   633.08   -25.36   363
1760    610.04   632.10   -22.06   352
1761    605.33   628.34   -23.01   359
1762    605.37   627.21   -21.84   333
1763    608.39   624.35   -15.96   322
1764    602.71   625.55   -22.84   366
1765    603.28   625.26   -21.98   365
1766    603.63   626.46   -22.83   364
1767    608.42   629.34   -20.92   365
1768    611.96   632.03   -20.07   365
1769    609.39   632.84   -23.45   365
1770    606.28   635.36   -29.08   365
1771    613.11   638.39   -25.28   365
1772    622.25   639.60   -17.35   354
1773    614.16   638.90   -24.74   365
1774    614.94   638.49   -23.55   364
1775    613.78   639.39   -25.61   365
1776    612.66   637.20   -24.54   366
1777    611.47   634.12   -22.65   360
1778    608.89   633.47   -24.58   334
1779    603.43   630.91   -27.48   364
1780    601.85   627.64   -25.79   366
1781    600.09   624.69   -24.60   362
1782    603.75   624.84   -21.09   365
```

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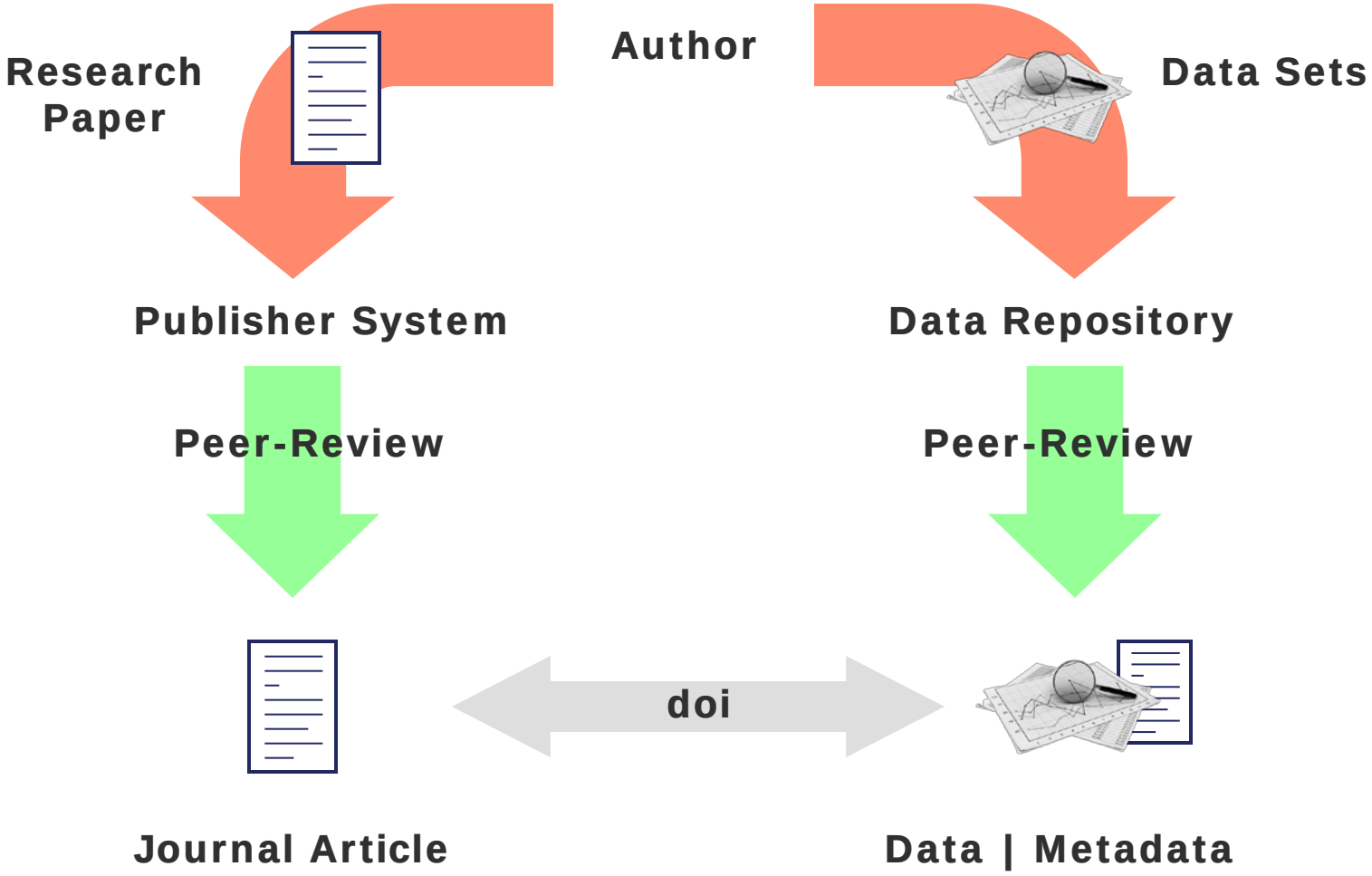
2 – Data as a Supplement (external)



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Data Description

Show Map | Google Earth | RIS | BibTeX

Citation: Dupont, LM et al. (2008): AMS radiocarbon dates and pollen analysis of ODP Hole 175-1078C. doi:10.1594/PANGAEA.726887,
Supplement to: **Dupont, Lydie M; Behling, Hermann; Kim, Jung-Hyun (2008):** Thirty thousand years of vegetation development and climate change in Angola (Ocean Drilling Program Site 1078). *Climate of the Past*, **4**, 107-124, doi:10.5194/cp-4-107-2008

Abstract: ODP Site 1078 situated under the coast of Angola provides the first record of the vegetation history for Angola. The upper 11 m of the core covers the past 30 thousand years, which has been analysed palynologically in decadal to centennial resolution. Alkenone sea surface temperature estimates were analysed in centennial resolution. We studied sea surface temperatures and vegetation development during full glacial, deglacial, and interglacial conditions. During the glacial the vegetation in Angola was very open consisting of grass and heath lands, deserts and semi-deserts, which suggests a cool and dry climate. A change to warmer and more humid conditions is indicated by forest expansion starting in step with the earliest temperature rise in Antarctica, 22 thousand years ago. We infer that around the period of Heinrich Event 1, a northward excursion of the Angola Benguela Front and the Congo Air Boundary resulted in cool sea surface temperatures but rain forest remained present in the northern lowlands of Angola. Rain forest and dry forest area increase 15 thousand years ago. During the Holocene, dry forests and Miombo woodlands expanded. Also in Angola globally recognised climate changes at 8 thousand and 4 thousand years ago had an impact on the vegetation. During the past 2 thousand years, savannah vegetation became dominant.

Project(s): **Ocean Drilling Program** (ODP)

Coverage: *Latitude:* -11.920778 * *Longitude:* 13.400250

Event(s): **175-1078C** * *Latitude:* -11.920778 * *Longitude:* 13.400250 * *Date/Time Start:* 1997-09-03T18:10:00 * *Date/Time End:* 1997-09-04T06:05:00 * *Elevation:* -426.0 m * *Recovery:* 149.60 m * *Penetration:* 165.20 m * *Location:* Benguela Current * *Campaign:* Leg175 * *Basis:* Joides Resolution * *Device:* Drilling * *Comment:* 18 cores; 165.2 m cored; 0 m drilled; 90.5 % recovery

License: Creative Commons Attribution 3.0 Unported

Size: 3 datasets

Download Data

Download **ZIP** file containing all datasets as tab-delimited text *(use the following character encoding:* ISO-8859-1: ISO Western (PANGAEA default))

Datasets listed in this Collection

1. **Dupont, LM; Behling, H; Kim, J-H (2008):** AMS radiocarbon dates of ODP Hole 175-1078C below 9.80 mbsf. doi:10.1594/PANGAEA.701489
2. **Dupont, LM; Behling, H; Kim, J-H (2008):** Pollen analysis of Hole 175-1078C (part 1), counts of total pollen and fern spores. doi:10.1594/PANGAEA.701481
3. **Dupont, LM; Behling, H; Kim, J-H (2008):** Pollen analysis of Hole 175-1078C (part 2), counts of total pollen and fern spores. doi:10.1594/PANGAEA.701483

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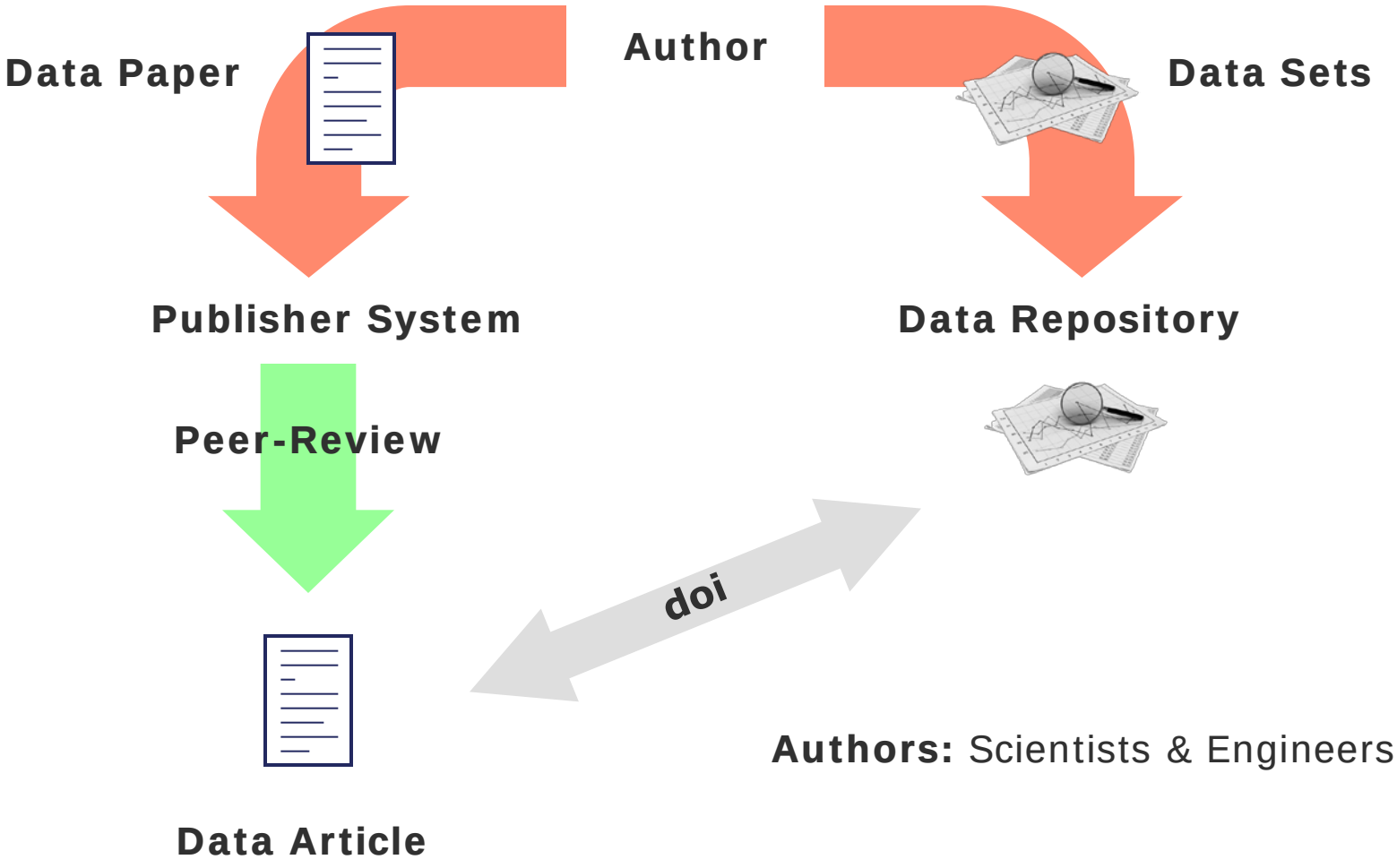
3 – Data as a Publication



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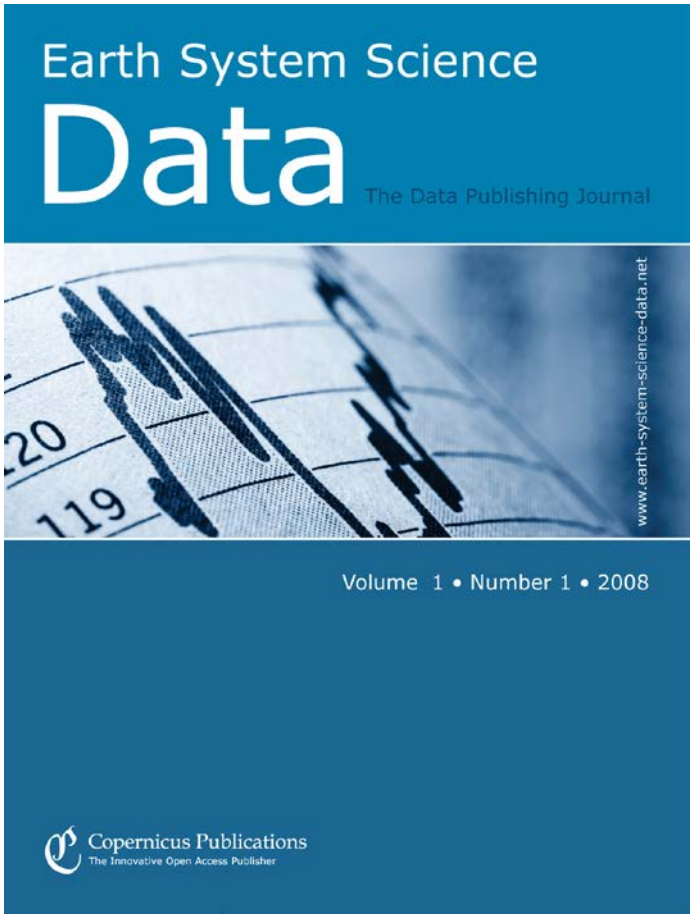
The Data Publishing Journal ESSD



- Articles on original data sets
- Furthering re-use of high quality data
- Data section: planning, instrumentation, execution of data collection
- No interpretation
- Methods section: filter, normalize, convert raw data to primary
- No comparison to other methods
- **Started in 2009**, 31 articles
- Chief Editors: Dave Carlson (IPY), Hans Pfeiffenberger (AWI)
- Managing Editor: Sünje Dallmeier-Tiessen (CERN)

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Before submitting a Data Article

- Submit the data sets to a reliable data repository
- The data has to be **Open Access**
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Examples for Data Repositories of ESSD Articles

- **BODC** (British Oceanographic Data Centre)
- **CDIAC** (Carbon Dioxide Information Analysis Center)
- **HOAPS** (Hamburg Ocean Atmosphere Parameters and Fluxes from Satellite Data)
- **NORPERM** (Norwegian Permafrost Database)
- **PANGAEA** (Data Publisher for Earth & Environmental Science)
- **ZALF Open Research Data** (Leibniz Centre for Agricultural Landscape Research)

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ESSD's Manuscript Structure

- Abstract
- Data coverage & parameters measured
- Instrumentation & methods
- Data provenance & structure
- Data access
- References

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Earth Syst. Sci. Data, 3, 1–8, 2011
www.earth-syst-sci-data.net/3/1/2011/
doi:10.5194/essd-3-1-2011
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Earth System Science Data

Polar baseline surfac
the Internatio

C. Lanconelli[1], M. Busetto[1], E. G. Dutto

[1]Institute of Atmosp
[2]National Oceanic and Atm
[3]Alfred Wege
[4]National Inst

Received: 27 August 2010 – Publ
Revised: 15 December 2010 – A

Abstract. Downwelling and upwelling sh
sites, taking part of the Baseline Surface R
International Polar Year (March 2007 to M
metadata and supplementary data for some
Ålesund) and Alaska (Barrow), represent A
sea-level (Dronning Maud Land and Cosn
Antarctic Plateau). The BSRN-IPY dataset
doi:10.1594/PANGAEA.737668, and can b
The dataset has been summarized as mont
criteria not previously applied.

1 Introduction

The radiative energy budget at the surface plays a fu
tal role in defining the thermal conditions and drives
eral circulation of the earth-atmosphere system, sh
main characteristics of the earth's climate. To pr
scientific community with a high quality surface s
and terrestrial radiation monitoring, the Baseline Su
diation Network (BSRN, http://bsrn.awi.de), was es
in 1988, under the oversight of the GEWEX Radiat
(www.gewex.org). The BSRN provides accurate
ment of surface radiation fluxes collected at 51 site
the world. The project provides structure and gene
ance to a select group of international observing site
leaders voluntarily contribute their efforts and data
tral data archive. A set of associated requirements a
fications (Heimo et al., 1993; Ohmura et al., 1998;
al., 1998; McArthur, 2004) as well as the overall g
been subject to review and revision as new needs,

Correspondence to: C. Lancon
(c.lanconelli@isac.cnr.it)

Published by Copernicus Publications.

Table 1. List of the BSRN stations covered by the dataset, BSRN station identifier and number and abbreviation (st_n/st_id), coordinates, surface and topography type. Basic measurements of radiation (B), Expanded measurements (E), Meteorological synoptic observations (M), Ozone measurements (O), and Radiosonde measurements (R).

Site	st_n	st_id	LAT°	LON°	Alt(mt)	Surface type	Topography type	Data type
Ny Ålesund	11	*nya*	78.925	11.950	11	Tundra	Mt. valley, rural	B,E,M,O,R
Barrow	22	*bar*	71.323	−156.607	8	Tundra	flat, rural	B
Syowa	17	*syo*	−69.005	39.589	18	Sea Ice	hilly, rural	B,M,O,R
G. von Neumayer	13	*gvn*	−70.650	−8.250	42	Iceshelf	flat, rural	B,E,M,O,R
Dome C	74	*dom*	−75.100	123.383	3233	Glacier, accum.	flat rural	B
South Pole	26	*spo*	−89.983	−24.799	2800	Glacier, accum.	flat rural	B

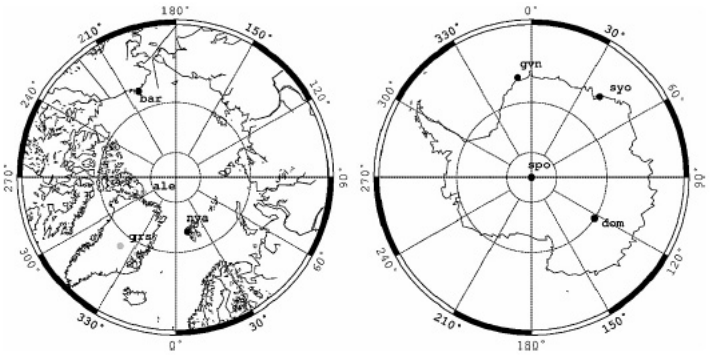

Figure 1. Position of the BSRN-IPY polar station (black), along with BSRN stations in pending status (gray).

summary of the data that will be of interest to IPY participants and others who wish to focus their research on the polar regions. In this paper we highlight certain observational and data evaluation issues specific to the extreme polar conditions.

2 BSRN-IPY dataset description

The BSRN-IPY dataset contains many continuously measured top-quality broadband surface radiation fluxes, averaged over one minute, collected by BSRN polar stations from March 2007 to March 2009, coincident to the IPY intensive field experiment (http://ipy.arcticportal.org). Description of the BSRN polar stations contributing data to this dataset are indicated in Table 1. Four of them are operating in Antarctica at both coastal (Syowa 69° S, and Neumayer 71° S) and high plateau (Amundsen-Scott 90° S and Dome C 75° S) positions. The remaining two stations, Ny Ålesund 79° N and Barrow 71° N, represent northern polar conditions at sea level, from Svalbard archipelago and Alaska respectively. Geographic position of the operating BSRN stations included in this dataset, and of two additional stations not included in this dataset because in a pending status (Alert 83° N and Greenland Summit 73° N), are given in Fig. 1.

The basic set of measurements to be implemented in order to be part of the network, consists of the downwelling components of the solar and longwave radiations. The global, diffuse and direct components of the solar radiation have to be measured with independent instruments. This is a common set of measurements for all the BSRN sites. Some of them also have an expanded set of measurement composed of the upwelling shortwave and longwave components (Ny Ålesund and Neumayer). Additionally supplementary datasets like synoptic observations, upper air soundings, ozone values and ceilometer data are given for a few stations (Ny Ålesund, Neumayer 71° S and Syowa 69° S).

Other stations measure upwelling components of SW and LW (Dome C and Amundsen-Scott), but were not submitted to archive when the present release of the BSRN-IPY dataset was compiled. Interested users are requested to check for

8

Editor

9

Final Revised Paper

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Why Public Peer-Review?

- Squaring the circle: **fast and thorough**
- Proving the quality of review
  - High transparency
  - Tracking of manuscript's evolution
  - Reward for reviewers

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Simulation of the time-variable gravity field by means of coupled geophysical models

Th. Gruber[1], J. L. Bamber[2], M. F. P. Bierkens[3], H. Dobslaw[4], M. Murböck[1], M. Thomas[4], L. P. H. van Beek[3], T. van Dam[5], L. L. A. Vermeersen[6], and P. N. A. M. Visser[6]

[1]Institute of Astronomical and Physical Geodesy, Technical University Munich, Germany
[2]Bristol Glaciology Centre, University of Bristol, UK
[3]Department of Physical Geography, Utrecht University, The Netherlands
[4]Deutsches GeoForschungsZentrum Potsdam, Germany
[5]University of Luxembourg, Faculty of Science, Technology, and Communication, Department of Physics and Material Sciences, Luxembourg
[6]Delft Institute of Earth Observation and Space Systems, Delft University of Technology, The Netherlands

Abstract. Time variable gravity fields, reflecting variations of mass distribution in the system Earth is one of the key parameters to understand the changing Earth. Mass variations are caused either by redistribution of mass in, on or above the Earth's surface or by geophysical processes in the Earth's interior. The first set of observations of monthly variations of the Earth gravity field was provided by the US/German GRACE satellite mission beginning in 2002. This mission is still providing valuable information to the science community. However, as GRACE has outlived its expected lifetime, the geoscience community is currently seeking successor missions in order to maintain the long time series of climate change that was begun by GRACE. Several studies on science requirements and technical feasibility have been conducted in the recent years. These studies required a realistic model of the time variable gravity field in order to perform simulation studies on

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Simulation of the time-variable gravity field by means of coupled geophysical models

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Abstract | Discussion Paper (PDF, 2107 KB)

Interactive Discussion

Status: Closed

AC: Author Comment | **RC**: Referee Comment | **SC**: Short Comment | **EC**: Editor Comment

- Printer-friendly Version - Supplement

SC C11: 'persistent link to data required', Hannes Grobe, 25 Jul 2011
  AC C12: 'Persistent link to data (answer)', Thomas Gruber, 25 Jul 2011
    SC C14: 'data DOI', Hannes Grobe, 01 Aug 2011
      AC C15: 'Proofreading and Approval', Thomas Gruber, 03 Aug 2011
    EC C16: 'On data access and long term archival', Giuseppe M.R. Manzella, 03 Aug 2011

RC C21: 'review of essd-2011-3', Luca Cocchi, 02 Sep 2011

RC C24: 'Interactive Comment', Marco Ligi, 20 Sep 2011
  AC C28: 'Answer to Interactive Comment by Marco Ligi', Thomas Gruber, 06 Oct 2011

AC C26: 'Reply to Reviewers Comments', Thomas Gruber, 05 Oct 2011

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Earth System Science Data Discussions

Interactive comment on "Simulation of the time-variable gravity field by means of coupled geophysical models" *by* Th. Gruber et al.

L. Cocchi (Referee)

luca.cocchi@ingv.it

Received and published: 2 September 2011

The paper presented by Gruber et al is well written, well documented and clearly organized. The authors present an interdisciplinary study aimed to outline a global predictive model of the time variation of the gravity fields of the Earth. A realistic model of the changing during the time of the gravity field has a leading role in simulation studies on sensitivity of satellites. The proposed analysis is based on a coupling of different geophysical models correlated to different domains of the Earth. The final predictive model was obtained combining and converting in spherical harmonic series gravity field each individual model. The paper shows a clear organization with a good balance among the different sections. I enjoyed the paper and I think that it is worthy for the publication. I have only a few minor suggestions.

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ESSD's Review Criteria

- Originality
- Significance
  - Uniqueness – no replication on routine basis
  - Usefulness – usage for interpretation, comparison, verification
  - Completeness – re-usage in one context
- Data Quality – best practises, inconsistencies, implausible assertions
- Presentation Quality

- Repository Criteria
  - Persistent identifier
  - Open Access & liberal copyright
  - Long-term availability

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ESSD's Target Groups

"My first publication after 20 Years of Research!"

– An AWI Engineer

- Classical research scientist prior to his/her research article
- Modelling scientists publish his/her model and data
- Engineers collecting the data but never write research papers

Data Publication as a Reward

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Conclusions

- Importance of accessibility **and** quality assurance
- Data as a supplement (in-house)
  - Advantage internal peer-review
  - Advantage data publication alongside the research paper
  - Disadvantage size of data sets
- Data as a supplement (external)
  - Advantage external data repository capacities
  - Disadvantage external peer-review
- Data as a publication
  - Advantage external data repository capacities
  - Advantage internal peer-review dedicated to the data sets
- Data publication prior to the publication of the research paper

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Outlook / Challenges

- General doubt of scientists to make **their** data publicly available
- Educate referees to review data, generate standard tests
- Comprehension of data articles as completion
  - Publishing the model description through a model article
  - Publishing the data through a data article
  - Publishing methods and results as research article

Hydrologist's Land of Milk and Honey

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Thank you very much
for your attention!

Martin Rasmussen | Copernicus Publications

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