



# DEEPWAVE DATA MANAGEMENT



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Computing, Data, and Software Facility (CDS)**



**DEEPWAVE Science Workshop**

**Boulder, CO**

**23-24 October 2014**



EOL DEEPWAVE support sponsored by



NCAR

# DEEPWAVE Web Site at NCAR/EOL

**NCAR UCAR EOL** Earth Observing Laboratory  
Development • Deployment • Data • Discovery

## DEEPWAVE

A study of deeply propagating gravity waves from the Earth's surface to the mesosphere

May 29, 2014 to July 27, 2014 Project Location: Christchurch, New Zealand, South Island, New Zealand, and surrounding Southern Ocean

**What's New?**

- DEEPWAVE Science and Operations Planning Meeting**, 26-28 March 2014, NCAR, Boulder: the meeting will be held in the EOL Atrium. The preliminary agenda (dated March 20) is now available.
- January 2014 Christchurch NZ and USAP site survey report
- DEEPWAVE International Science and Operations Planning Meeting, 21-22 January 2014, University of Canterbury, Christchurch, NZ: Meeting Presentations and Summary Report, now available.

**Project Description:**

DEEPWAVE-NZ (Deep Propagating Gravity Wave Experiment over New Zealand) will study the dynamics of gravity waves (GWs) from the surface of the earth to the mesosphere and lower thermosphere (MLT). The project examines how tropospheric winds and storms modulate the generation of GWs, how GWs propagate across the tropopause into the stratosphere, and how the Polar Night Jet and tidal winds influence GW propagation and breakdown in the middle atmosphere. Important observational components of DEEPWAVE include in situ measurement from the NSF/NCAR HIAPER Gullstream-V research aircraft along with surface, airborne and satellite-based remote sensing. EOL will also deploy an Integrated Sounding System (ISS) with a radar wind profiler and other ground instrumentation on the West Coast of New Zealand.

**Scientific Objectives**

- Detailed measurement of deeply propagating GWs over several density scale heights using in situ and airborne remote sensing
- Determine the relationship between GWs in the Upper Troposphere and Lower Stratosphere (UTLS) and GWs in the Mesosphere and Lower Thermosphere (MLT)
- Implementation of new airborne remote sensing lidars and a mesospheric temperature mapper (MTM) to extend GW measurements into the MLT
- Comparison of airborne observations of GWs with satellite observations
- Assessment of GW variations with altitude, including filtering and interactions throughout the stratosphere and mesosphere, and the implications for vortex-edge drag and MLT forcing
- Development and testing of numerical models of GW generation and deep propagation over several density scale heights
- Fundamental predictability studies of GWs and their secondary effects, which will guide our improvements in GW prediction and parameterizations in applications for numerical weather prediction, climate, and general circulation modeling communities.

**Project Facilities Deployment Timeline:**

The DEEPWAVE Facilities Timeline below summarizes the deployment of various facilities and other special observing support for the DEEPWAVE Project. Some details are provided on the timeline for set-up, ferry and actual data collection period, if known. Please provide updates to this information so that we can keep the current schedule of support as up to date as possible.

Facility	May	June	July	August
<b>Global</b>				
<b>Surface Based</b>				
<b>DLR Research</b>				
<b>Collaborative Observations</b>				
<b>Business Model Data</b>				
<b>Research Training</b>				
<b>Public Outreach</b>				

- Project Description
- Data Access & Field Catalog
- Publications
- Documentation
- Meetings and Presentations
- Mailing Lists
- Education and Outreach
- Related Web Pages
- PI and Contact Information

[https://www.eol.ucar.edu/field\\_projects/deepwave](https://www.eol.ucar.edu/field_projects/deepwave)

# DEEPWAVE Data Policy and Data Submission Instructions

FTP: ftp.eol.ucar.edu

Login: anonymous

*(No password required.)*

cd pub/data/incoming/deepwave

*(NOTE: This command should be done all in one step.)*

It is very important to **send an e-mail to [sfw at ucar.edu](mailto:sfw@ucar.edu) indicating that the data file(s) have been FTPed**

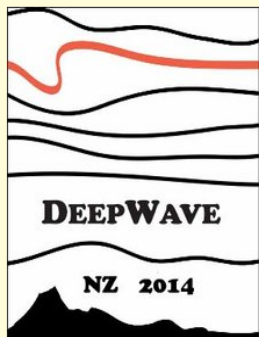


1. All investigators participating in DEEPWAVE agree to promptly submit their preliminary processed data and metadata to the main DEEPWAVE Data Archive Center at EOL no later than 29 January 2015 (six months after the end of the field campaign) to facilitate initial instrument inter-comparisons, quality control checks and calibrations, as well as early interpretation of the combined data set. Individual preliminary datasets can be restricted (password protected) at the discretion of the data provider. All archived supporting operational data and products will be open and accessible by the Scientific Community during this period. **The preliminary data submission period is from 29 July 2014 to 29 January 2015.**
2. DEEPWAVE Investigators agree to **submit their final research data and metadata to the EOL within the one-year period** following the conclusion of the field campaign. **The final data submission period is from 29 July 2014 to 29 July 2015.**
3. During the initial data analysis period, defined as a one-year period following the preliminary data submission deadline to the DEEPWAVE archive, DEEPWAVE Principal Investigators (PIs) will have exclusive access to these research data. This initial analysis period is designed to provide an opportunity to quality control the combined data set as well as to provide the PIs, their students and collaborators ample time to analyze and publish their results. **The initial data analysis period is from 29 January 2015 to 29 January 2016.**
4. **All data and metadata in the archive will be considered open to the public domain 18 months following the end of the field campaign** (i.e., on 1 February 2016 and thereafter). However, any research dataset within the DEEPWAVE archive can be opened to the public domain earlier at the discretion of the responsible data provider in consultation with the DEEPWAVE SSC.
5. **A list of DEEPWAVE Investigators will be provided by the project science leadership to EOL** and will include the PIs directly participating in the field experiment as well as collaborating scientists and agencies who have provided guidance and data in the planning and analysis of DEEPWAVE data. All DEEPWAVE investigators will have equal access to all data. All data shall be promptly provided to other DEEPWAVE investigators on the above specified list upon request. However, **the DEEPWAVE science leadership will be responsible for approving any data requests from investigators not included on the list.**
6. **During the initial data analysis period, the responsible data provider must be notified first of the intent to use their data**, in particular if data are to be provided to a third party (e.g., journal articles, presentations, research proposals, other investigators). It is strongly encouraged that the responsible data provider(s) be invited to become collaborators and/or co-authors on any projects, publications and presentations. If the contribution of the data product is significant to the publication, the PIs responsible for generating a measurement or a data product should be offered the right of co-authorship. Any use of the data should include an acknowledgment or preferably a citation (e.g. Digital Object Identifiers or DOIs). **The EOL expects to be assigning DOIs for all final datasets submitted to the main archive at EOL.** In all circumstances, the responsible data provider(s) should be acknowledged appropriately.
7. All acknowledgments of DEEPWAVE data and resources should identify: (1) DEEPWAVE; (2) The providers who collected the particular datasets being used in the study; (3) The relevant funding agencies associated with the collection of the data being studied, and (4) the role of EOL or relevant data archive center, and (5) use of any relevant DOIs.
8. The EOL will be responsible for the long-term data stewardship of the DEEPWAVE archive.

# DRAFT DEEPWAVE DATA MANAGEMENT MILESTONES

Event	Deadline
End of Field Campaign	28 July 2014
Preliminary Data Submission	29 January 2015
Final Data Submission	29 July 2015
Initial Data Analysis Period (DEEPWAVE Science Team members have exclusive access to the data during this period.)	29 January 2015 to 29 January 2016
Data becomes Public Domain	1 February 2016

# DEEPWAVE Data Archive (Master List)



## DATA BY CATEGORY

- Aircraft
- Ancillary
- Land Based
- Model
- Oceanography
- Photography
- Radar
- Satellite
- Upper Air

## DATA BY SITE

- Hobart, Tasmania
- Hokitika, South Island, New Zealand
- Lauder, South Island, New Zealand
- Macquarie Island, Tasmania

Aircraft: NSF/NCAR GV HIAPER		
NSF/NCAR GV HIAPER Advanced Mesospheric Temperature Mapper (AMTM) Data [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Aerosol Data [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Cloud Probe Data [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Digital Camera Imagery - Forward-Looking [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Dropsonde High Resolution Data (EOL Format) [(NCAR-EOL-RAF)]		
<a href="#">NSF/NCAR GV HIAPER Dropsonde High Resolution Data (raw) [Young, Kate (NCAR-EOL-ISF)]</a>	New 2014-10-23	
NSF/NCAR GV HIAPER Energy and Momentum Flux Data [Smith, Ron, Alison Nugent, Chris Kruse (Yale)]		
NSF/NCAR GV HIAPER Flight Tracks (Google Earth .kml files) [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Instrument Status Reports [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Low Rate (LRT - 1 sps) Navigation, State Parameter, and Microphysics Flight-Level Data (NetCDF) [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Mesoscale Temperature Mapper (MTM) Data [Taylor, Mike, Dominique Pautet, and Neal Criddle (Utah State Univ.)]		
<a href="#">NSF/NCAR GV HIAPER Mesoscale Temperature Mapper (MTM) Imagery [(NCAR-EOL)]</a>	New 2014-10-21	
NSF/NCAR GV HIAPER Microwave Temperature Profiler (MTP) Data [(NCAR-EOL-RAF)]		
<a href="#">NSF/NCAR GV HIAPER Microwave Temperature Profiler (MTP) Imagery [(NCAR-EOL)]</a>	New 2014-10-21	
NSF/NCAR GV HIAPER Photography [(NCAR-EOL-RAF)]		
NSF/NCAR GV HIAPER Uplooking Rayleigh Lidar Data [Williams, Bifford P. (GATS, Inc.)]		
NSF/NCAR GV HIAPER Uplooking Sodium (Na) Lidar Data [Williams, Bifford P. (GATS, Inc.)]		
<a href="#">NSF/NCAR GV HIAPER Uplooking Sodium (Na) Lidar Imagery [(NCAR-EOL)]</a>	New 2014-10-21	
<a href="#">PRELIMINARY Flight Tracks (Google Earth .kml files) [(NCAR-EOL-RAF)]</a>	Preliminary	
<a href="#">PRELIMINARY Low Rate (LRT - 1 sps) Navigation, State Parameter, and Microphysics Flight-Level Data [(NCAR-EOL-RAF)]</a>	Preliminary	

# DEEPWAVE ARCHIVE DATA DOCUMENTATION

## Data Set Documentation ("Readme") Guidelines

The documentation (i.e., the "Readme" file) that accompanies each project data set is as important as the data itself. This information permits collaborators and other analysts to understand any limitations or special characteristics of the data that may impact its use. Data set documentation should accompany all data set submissions, including both preliminary and final. The following outline and content is recommended and should be adhered to as closely as possible to make the documentation consistent across all data sets.

### Data set Documentation/Readme Outline:

**Title:** This should match the data set name

**Author(s):**

Name(s) of PI and all co-PIs  
Complete mailing address, telephone/facsimile numbers,  
E-mail address of PIs, and web address (if applicable)  
Similar contact information for data questions (if different than above)

**1.0 Data Set Overview:**

Introduction or abstract  
Time period covered by the data  
Physical location (including lat/lon/elev) of the measurement or platform  
Data source if applicable (e.g., for operational data include agency)  
Any web address references (i.e., additional documentation such as Project web site)

**2.0 Instrument Description:**

Brief text (i.e., 1-2 paragraphs) describing the instrument with references  
Figures (or links), if applicable  
Table of specifications (i.e., accuracy, precision, frequency, resolution, etc.)

**3.0 Data Collection and Processing:**

Description of data collection  
Description of derived parameters and processing techniques used  
Description of quality assurance and control procedures  
Data intercomparisons, if applicable

**4.0 Data Format:**

Data file structure and file naming conventions (e.g., column delimited ASCII, NetCDF, GIF, JPEG, etc.)  
Data format and layout (i.e., description of header/data records, sample records)  
List of parameters with units, sampling intervals, frequency, range  
Data version number and date  
Description of flags, codes used in the data, and definitions (i.e., good, questionable, missing, estimated, etc.)

**5.0 Data Remarks:**

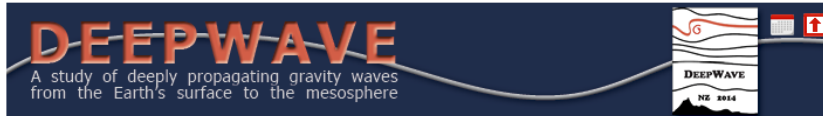
PI's assessment of the data (i.e., disclaimers, instrument problems, quality issues, etc.)  
Missing data periods  
Software compatibility (i.e., list of existing software to view/manipulate the data)

**6.0 References:**

List of documents cited in this data set description. Please provide links for on-line publications, if available.

# DEEPWAVE PROJECT PUBLICATIONS LIBRARY

View Edit Webform Book access Outline Results Revisions



## DEEPWAVE Publication References

### How to Submit Publication References to this List

Publications Conferences Reports Theses Other Citation Links

#### PUBLICATIONS

A-D E-H I-L M-P Q-T U-Z [Back to Top](#)

#### CONFERENCE PROCEEDINGS

A-D E-H I-L M-P Q-T U-Z [Back to Top](#)

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#### THESES

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#### OTHER CITATION LINKS

- [Web of Science](#)
- [Meteorological Abstracts - \(UCAR Access Only\)](#)

The NCAR Library provides UCAR/NCAR/UCP staff Remote Access to the Library's electronic journals from anywhere in the world. Visit the [Library home page](#), click on "Remote Access" on the top bar of the page, and enter your UCAS username and password.

#### DATA DOCUMENTATION

- Data Policy
- Dataset Documentation Guidelines
- Data Submission Instructions
- Dry Run Field Catalog

#### PUBLICATIONS

- DEEPWAVE Publications

#### DOCUMENTS

- DEEPWAVE Overview Presentation
- Site Survey Report
- DEEPWAVE Badge
- DEEPWAVE Operations Plan

#### MEETINGS AND PRESENTATIONS

- DEEPWAVE Meetings

#### ALL DEEPWAVE FACILITIES AND INSTRUMENTATION

- ▶ DEEPWAVE EOL Facilities
  - GATS Airborne Lidar
  - DLR Facilities
  - NIWA Facilities
  - NZ Met Service Facilities

#### DEEPWAVE OUTREACH EVENTS

- DEEPWAVE Public Open House
- DEEPWAVE Teacher Workshop

# USE OF DIGITAL OBJECT IDENTIFIERS (DOIs) FOR DATA

- DOIs becoming functional for proper citation of datasets (similar to publications)
- Provide users with a simple, standard way to reference datasets
- Allows for the unique tracking of metrics for individual datasets
- Allows for linking of related datasets and publications
- NCAR has established a process for creating DOIs (DataCite Registration)
- DOIs are considered “perpetual” and provides proper attribution



# DEEPWAVE



**A study of deeply propagating gravity waves from  
the Earth's surface to the mesosphere**

**International Science and Operations Planning Meeting: Jan 21-22**

**DEEPWAVE INTERNATIONAL SCIENCE AND OPERATIONS PLANNING MEETING**

**21-22 January 2014**

University of Canterbury

Christchurch, New Zealand

[DEEPWAVE Meeting Summary Report](#)

## Meeting Presentations

**NOTE: Password Required to View Presentations**

For a PDF of one of the following presentations, click on the corresponding title. In some cases a PowerPoint Slideshow is also available, for those click on the PPSX after the title. A PowerPoint viewer can be downloaded from [Microsoft](#).

## TUESDAY, 21 JANUARY 2014

08:15 - 08:50	Light Breakfast
08:50 - 09:00	<a href="#">Introductions and Local Logistics (Andy Sturman, Ron Smith)</a>
	<i>DEEPWAVE PI presentations</i>
09:00 - 09:30	<a href="#">DEEPWAVE Science Overview (Dave Fritts, GATS) [PPSX]</a>
09:30 - 10:00	<a href="#">Satellite observations of waves in the middle atmosphere (Steve Eckermann, NRL)</a>
10:00 - 10:20	<a href="#">Modeling and predictability of mountain waves (Jim Doyle, NRL)</a>
10:20 - 10:30	Break
10:30 - 11:00	<a href="#">Mountain wave launching and energy diagnostics (Ron Smith, Yale)</a>
11:00 - 11:30	<a href="#">Modeling gravity wave breakdown in the middle atmosphere (Dave Fritts, GATS) [PPSX]</a>
11:30 - 12:00	<a href="#">Results from the 2013 DEEPWAVE Dry Run (Smith, Doyle, Fritts and Eckermann)</a>
12:00 - 13:30	Lunch

.... Finally, please provide a final copy of your PPT presentation for this Planning Meeting Documentation.

A PDF and/or PPSX copy of your presentation (not the PPT file) will be posted on the DEEPWAVE web site (password?)

