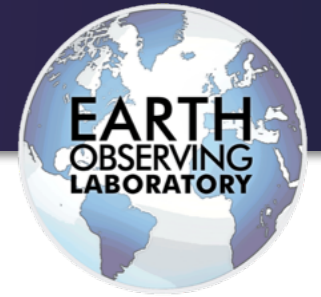


DEEPWAVE Public Engagement



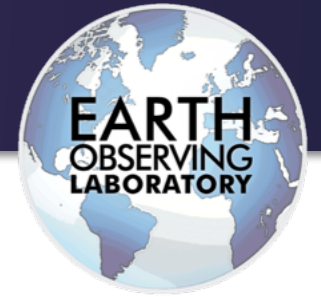
Summary of activities

1. School Visits
2. Public Engagement
3. Undergraduate & Graduate Student Involvement
4. Internet-based Outreach
5. Printed Material
6. Media Coverage
7. Collaborations

Alison Rockwell
EOL Education & Public
Engagement Coordinator



DEEPWAVE Public Engagement

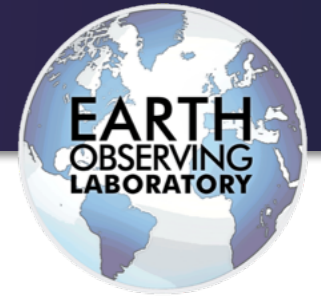


School Visits

School	# of Presentations	# of Students	# of DW Guest Speakers
Ao Tawhiti Unlimited Discovery School Grade 9-12	1	30	4
Christchurch Boys' School Grade 10-12	5	360	3
St Thomas of Canterbury College Grade 10-12	2	100	2
Villa Maria College Grade 12-13	1	10	5
Catholic Cathedral College Grade 10	1	65	3
	10	565	Avg 3.4



DEEPWAVE Public Engagement

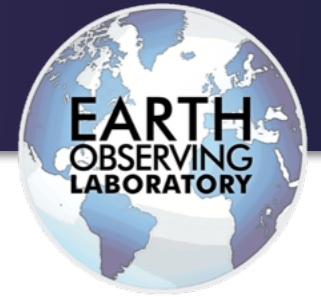


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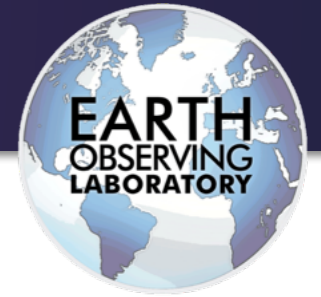


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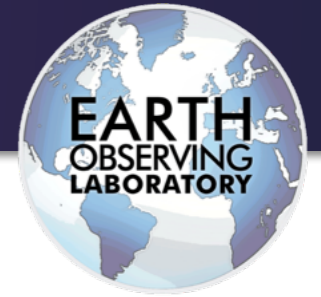


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DEEPWAVE Public Engagement



Public Engagement

- 🌐 Media Event :: 4 crews resulting in radio & TV pieces
- 🌐 Research Aircraft Open House :: 300 Visitors



DEEPWAVE Public Engagement

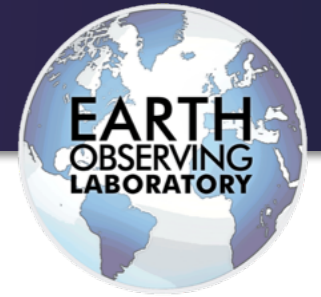


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DEEPWAVE Public Engagement



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DEEPWAVE Public Engagement



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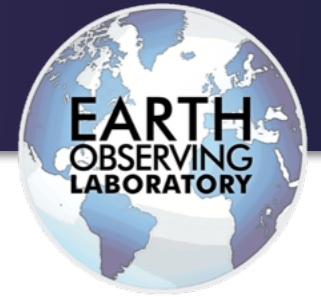
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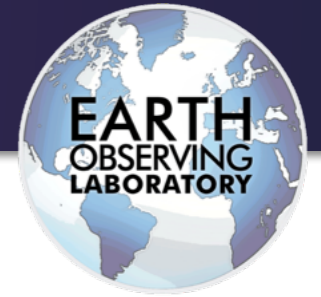


Undergraduate & Graduate Student Involvement

- 2 undergraduate students
- 23 graduate students
- 1 postdoctoral fellow

	Affiliation
8	DLR
2	GATS
1	Millersville University
6	University of Canterbury
1	University of Innsbruck
1	University of Mainz
1	Utah State University
6	Yale University
26	TOTAL

DEEPWAVE Public Engagement

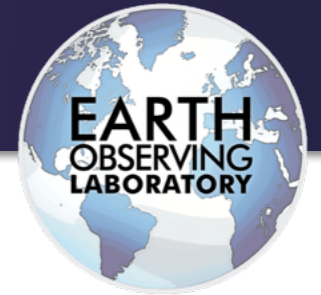


Internet-based Outreach

- 11 DEEPWAVE Outreach Webpages
- 1,999 views of all EO pages in a 104 day period (Google Analytics)
- 15 Facebook Posts
- 26 Tweets

Page Name	Page-Views :: 1 May - 12 Aug 2014 (overall DEEPWAVE page)
DEEPWAVE Open House	687 (4th)
Quick Questions for DEEPWAVE PIs	401 (5th)
DEEPWAVE Media Kit	170 (8th)
DEEPWAVE Science Team	163 (9th)
DEEPWAVE in the News	142 (11th)
DEEPWAVE Educational Resources	107 (12th)
DEEPWAVE Teacher Workshop	77 (14th)
DEEPWAVE Aircraft Payload	71 (15th)
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Follow the NSF/NCAR HIAPER in Real Time	55 (19th)
1,999 Total page-views in 104 days	

DEEPWAVE Public Engagement



Internet-based Outreach

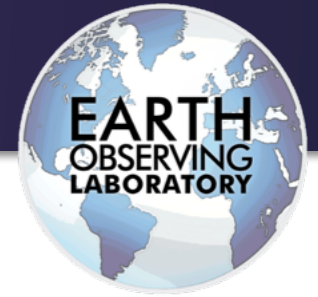
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For comparison: a public engagement program for a recent field project reached nearly five times as many students during the school visits, yet the outreach pages saw less than half of the number of page-views as DEEPWAVE.

An interesting discussion on demographics shall ensue...

DEEPWAVE Public Engagement

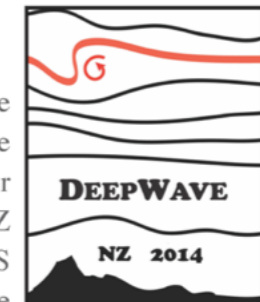


Printed Material

- DEEPWAVE postcard
- DEEPWAVE Open House flier

DEEPWAVE Deep Propagating Gravity Wave Experiment Over New Zealand

DEEPWAVE is an atmospheric science research project studying the dynamics of gravity waves from the surface of the Earth to the upper reaches of the atmosphere. DEEPWAVE is funded by the National Science Foundation (NSF), Office of Naval Research, and Naval Research Laboratory (NRL), and operated by the National Center for Atmospheric Research (NCAR), in collaboration with the German Aerospace Center DLR, NIWA, UK Met Office, NZ MetService, NRL, and Australian Antarctic Division. The project is led by Principal Investigators from several US universities and research centers as well as international colleagues from New Zealand, Germany, Australia, and the UK. DEEPWAVE aircraft operations will be based in Christchurch, with six ground-sites on the South Island and one in Wellington from June-July 2014.



WHAT ARE GRAVITY WAVES?

Gravity waves are ripples of energy that move vertically through the atmosphere and are widely recognized to play central roles in a broad range of thermal, chemical, and physical processes extending upward, high into the atmosphere. It is this upward transport of energy and momentum that causes gravity waves to play important roles at all altitudes, ultimately affecting regional weather and global climate.

SCIENCE SERVING SOCIETY

The data collected during this study will play a vital role in enhancing computer modeling and forecasting capabilities of weather events and changes in climate across the globe. This study will allow researchers to gain a better understanding of the effects that gravity waves have on the atmosphere, and the resulting weather and climate events that affect people and environments around the world.

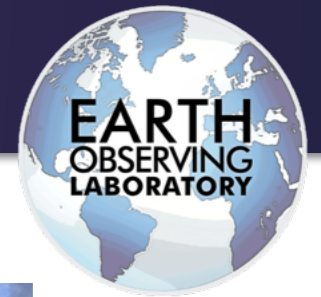
IMPORTANCE OF NEW ZEALAND

The southern hemisphere is an excellent laboratory for the project due to its reliable and consistent westerly wind circulation patterns. The Southern Alps, a mountain range creating one of the gravity wave “hotspots” in the Southern Hemisphere, is key to the research of the project. The seasonal positioning of the Southern Circumpolar Jet over the mountainous topography allows for the development of strong gravity waves.



Learn more :: www.eol.ucar.edu/deepwave/eo

DEEPWAVE Public Engagement



Printed Material

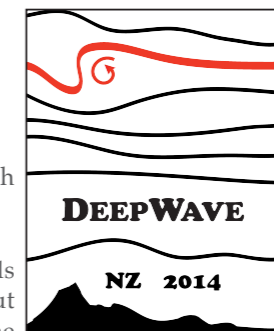
- DEEPWAVE postcard
- DEEPWAVE Open House flier



VISIT THE NSF/NCAR HIAPER GULFSTREAM V RESEARCH AIRCRAFT
This “flying laboratory” is involved with an atmospheric research project that will be based in Christchurch from 4 June - 27 July 2014. The project, called DEEPWAVE, is studying the dynamics of gravity waves from the surface of the Earth to the mesosphere and lower thermosphere.

You will have the opportunity to:

- » Talk with mission scientists, engineers, and other project staff
- » Explore the aircraft and instrumentation
- » Learn why New Zealand is a unique location for this type of atmospheric science research



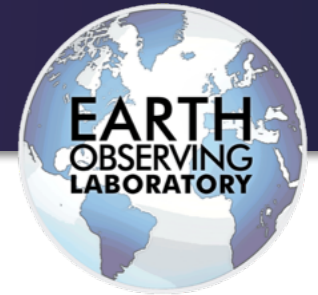
DIRECTIONS TO AIRCRAFT FACILITY :: GATE 3

Travel west on Memorial Road, towards Christchurch Airport. Turn right at roundabout (northeast) onto Orchard Road. If the lot to the north of the International Antarctic Center is full, then please use the pay and display lot to the south of the Center. Walk northwest across the street and enter through Gate 3. For safety reasons, please only bring children 6+ years old, and no more than 3 children per adult.

Learn more :: www.eol.ucar.edu/deepwave/eo

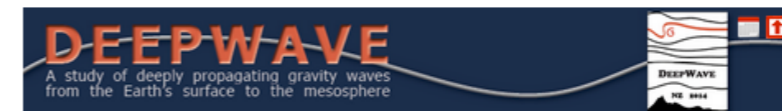


DEEPWAVE Public Engagement



Collaborations

- 🌐 UCAR Communications: *In Search of 60 mile-high waves*
- 🌐 UCAR Center for Science Education and COMET: activities on the DEEPWAVE Educational Resources page



DEEPWAVE in the News

Dannevirke: Wind study helps forecast-accuracy
Hawke's Bay Today | 18 July 2014



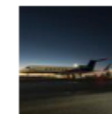
Growing up on a farm east of Dannevirke, Bill Brown always kept an eye on the weather. Now the former Dannevirke High School pupil studies the weather and the atmosphere which affects it, as a scientist at the National Centre for Atmospheric Research (NCAR) in Boulder, Colorado where he's worked for 16 years as a project scientist and group leader of the Earth Observing Laboratory.
>> [Read more](#)

Lasers over New Zealand - atmospheric researchers examine gravity waves
DLR Press Release | 11 July 2014



Atmospheric gravity waves influence the weather and long-term, climate-related atmospheric processes. For a number of nights between 29 June and 23 July 2014, the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) Falcon research aircraft will be flying over the New Zealand Alps (Southern Alps) [...]
>> [Read more](#)

Measuring Gravity Waves
Radio New Zealand | 10 July 2014



The aircraft is part of the international DEEPWAVE project, which brings together scientists from five countries who have all descended on New Zealand because it is one of the best places in the world to study these giant ripples in the atmosphere and their effect on weather systems.
>> [Read more](#)

DEEPWAVE
NIWA Science | 2 July 2014



One hundred people, a Gulfstream jet, some of the best technology available and two scientists in a paddock.
>> [Read more & watch videos](#)

Research into 'gravity waves' over alps
Radio New Zealand News | 22 June 2014



Atmospheric researchers based in Christchurch hope to deliver more reliable weather and climate forecasts. The Deepwave research team comprises scientists from the United States, Germany and New Zealand. They are using a flying laboratory to research the formation of gravity waves over the Southern Alps. Gravity waves have a strong effect on the weather, and occur when wind is disturbed by an obstructing landform, sending ripples up into the air.
>> [Read more](#)

Scientists hope for more accurate weather forecasts
OneNews NZ | 21 June 2014



Scientists from five countries are in Christchurch for a project to help develop more accurate weather
>> [Watch video](#)

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

DEEPWAVE EDUCATION & OUTREACH

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DEEPWAVE SOCIAL MEDIA

Like us on Facebook
 Watch us on YouTube
 Follow us on Twitter
 Follow us on LinkedIn

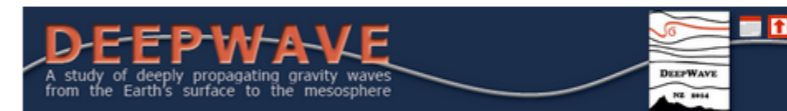
DEEPWAVE Public Engagement



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NCAR UCAR **EOL** Earth Observing Laboratory *development • deployment • data services • discovery* Log In Search



DEEPWAVE Educational Resources

VIDEOS

Air. Planet. People.



NSF/NCAR HIAPER Research Aircraft



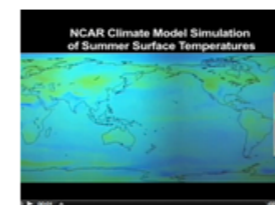
Gravity Wave :: Video by Daryl Herzmann.



Science Nation :: Dropsondes



How to Build a Climate Model



K-12 SCIENCE EDUCATION MODULES

Earth's Atmosphere



Earth's atmosphere is a mixture of gases that surrounds our home planet. Besides providing us with something to breathe, the atmosphere helps make life on Earth possible in several ways. It shields us from most of the harmful ultraviolet (UV) radiation coming from the Sun, warms the surface of our planet by about 33° C (59° F) via the greenhouse effect, and largely prevents extreme differences between daytime and nighttime temperatures. >> [Learn more](#)

Exploring the Atmosphere with Dropsondes



Let's say you would like to know how temperature, wind, air pressure and humidity vary throughout a hurricane. This information could help you know whether the hurricane is growing stronger and which direction it is heading. But hurricanes are dangerous storms. It's hard to get inside them. One way to get that information safely is to use dropsondes. >> [Learn more](#)

Exploring the Atmosphere with Weather Balloons



Every 12 hours, hundreds of people in places around the world release huge, white balloons into the sky. The balloons float upward, each tethered to a box of instruments that

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

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- NIWA Facilities
- NZ Met Service Facilities

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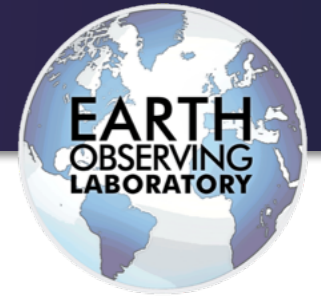
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- DEEPWAVE in the News
- DEEPWAVE Media Kit

DEEPWAVE SOCIAL MEDIA

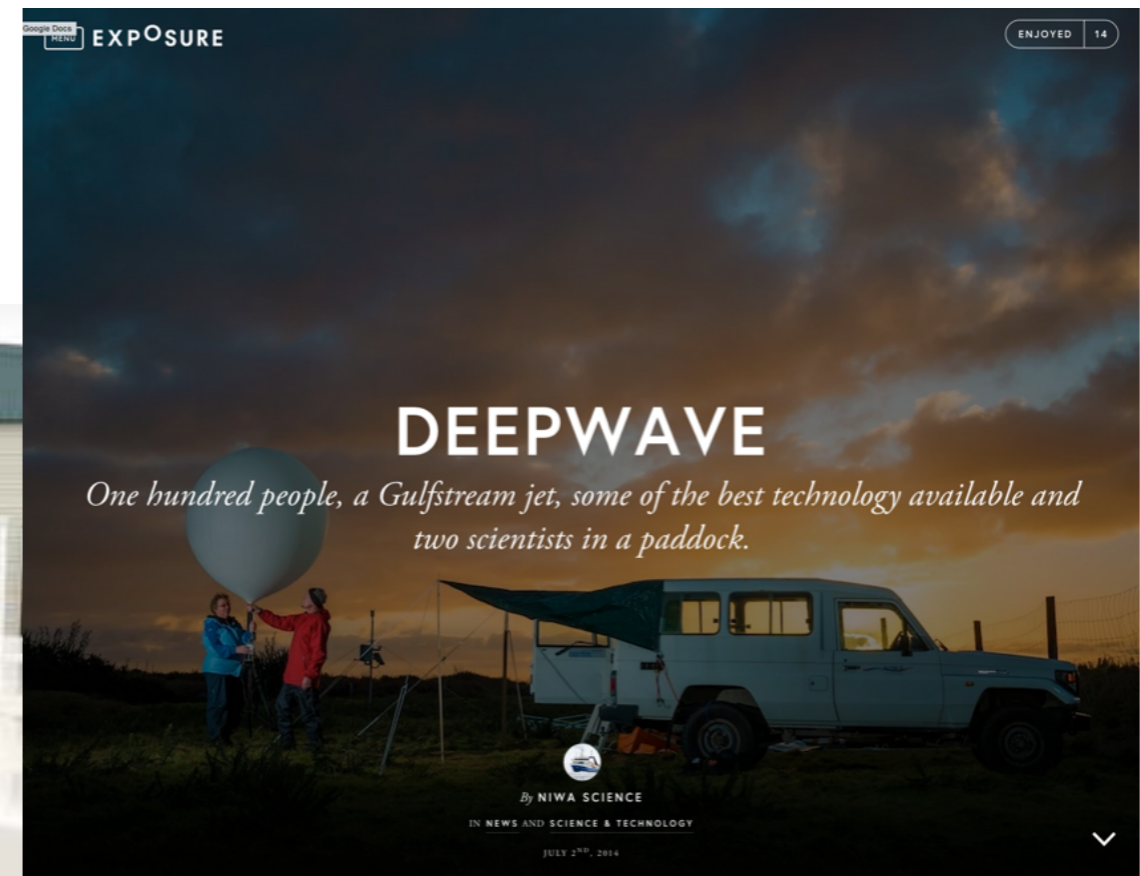
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- Watch us on YouTube
- Follow us on Twitter
- Follow us on LinkedIn

DEEPWAVE Public Engagement

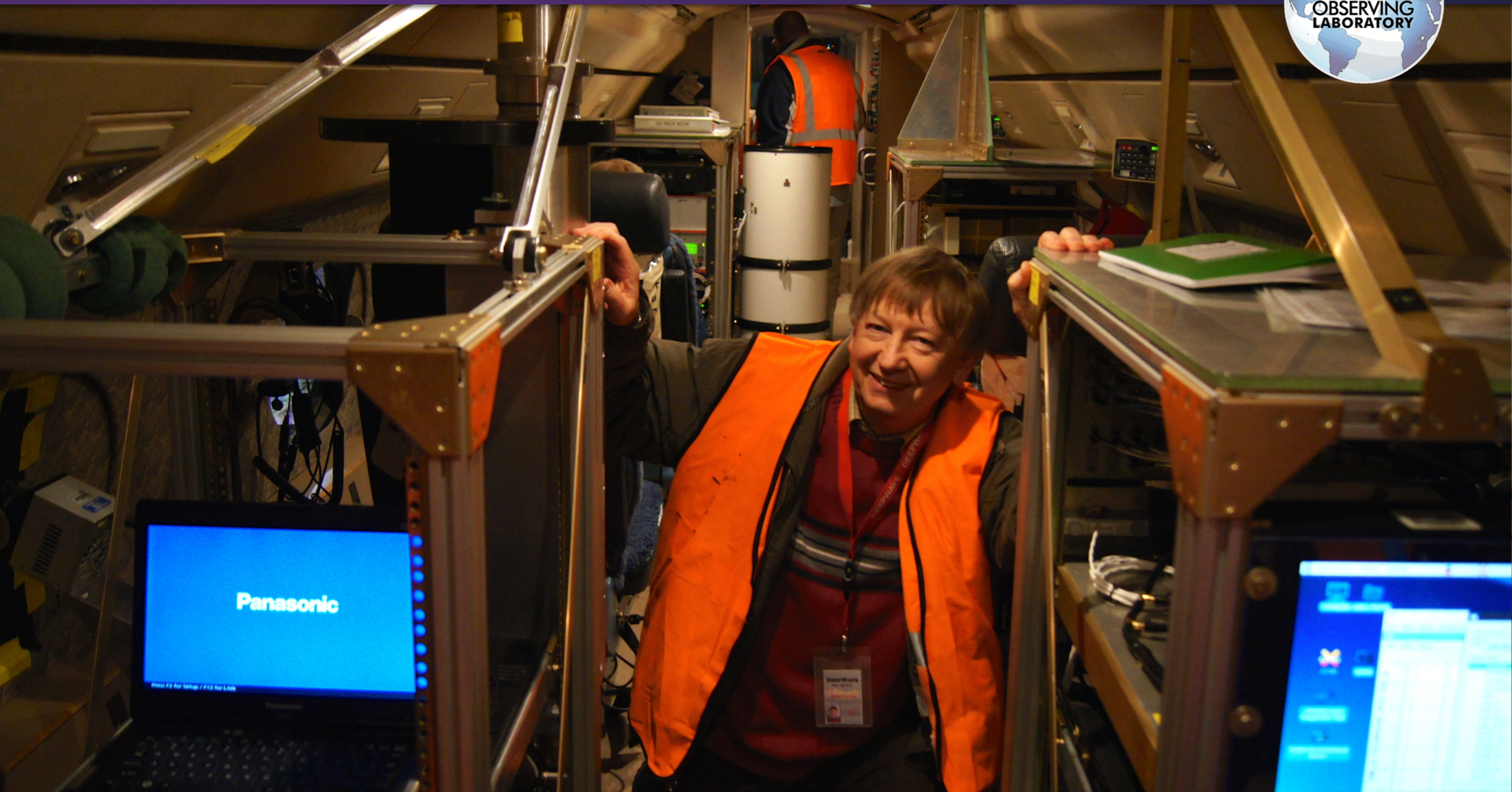
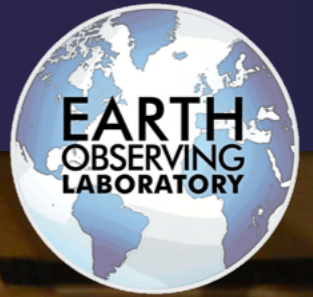


Media Coverage

- 7 unique pieces including radio, tv, and online
- DEEPWAVE in the News



DEEPWAVE Public Engagement



THANK YOU TO ALL WHO PARTICIPATED IN THE
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It was so successful because of your input and participation.

DEEPWAVE Public Engagement



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