

A wide-angle photograph taken from the International Space Station (ISS) showing a massive dust storm over the Indian Ocean. The storm is a large, swirling, brownish-grey cloud that covers a significant portion of the ocean's surface. The surrounding ocean is a deep blue, and the horizon of the Earth is visible at the top of the frame. The text "GEWEX Aerosol Precipitation Initiative (GAP)" is overlaid in white, bold, sans-serif font in the center of the image.

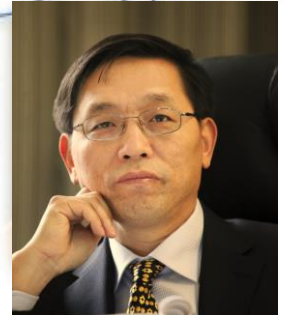
# GEWEX Aerosol Precipitation Initiative (GAP)

Sue van den Heever (CSU) and Philip Stier  
(Oxford)

Image: Astronaut Alex Gerst on ISS on September 8, 2014

# Aerosols and Precipitation?

## There exists a GAP!



**GAP**

**Sue van den Heever and Philip Stier**



# GEWEX Aerosol Precipitation (GAP)



GAP



Sue van den  
Heever



Philip Stier



A NEW GEWEX Initiative

GAP

Sue van den Heever and Philip Stier

# GEWEX



GASS

The Global Atmospheric System Studies Panel coordinates scientific projects that bring together experts to contribute to the development of atmospheric models.



GLASS

The Global Land/Atmosphere System Study focuses on model development and evaluation, concentrating on the new generation of land surface models.



GHP

The GEWEX Hydroclimatology Panel aims to understand and predict continental to local-scale hydroclimates for hydrologic applications.



GDAP

The GEWEX Data and Assessments Panel guides the production and evaluation of long term, global atmospheric, surface water, and energy budget products.

GAP

GAP

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# GEWEX Aerosol Precipitation (GAP)

## GAP GOALS:

1. Enhance our understanding of **aerosol-precipitation interactions** on a **regional to global scale** with a focus on energetics and water budgetary constraints in a regime based context
2. Facilitate connections between all GEWEX cloud-aerosol-precipitation activities
3. Interface with iLeaps/GEWEX/IGAC Aerosols, Clouds, Precipitation and Climate (ACPC) initiative to investigate aerosol and cloud processes on a local to cloud system scale

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# Upcoming GAP Activities

- Series of small round table discussions
  - First discussion: ACPC workshop held in Oxford in April 2016
  - Second discussion: GAP workshop to be held in Oxford on 28-30 June 2017
  - Third discussion: in planning phase
- Produce a review paper on the current evidence for aerosol effects on precipitation
- Link to WCRP Grand Science Challenges where possible
- Establish a white paper outlining GAP's "Grand Science Challenges"
- Implement the goals and strategies of the white paper

**GAP**

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# Aerosols, Clouds, Precipitation and Climate (ACPC)

- iLeaps/GEWEX/IGAC initiative
- To investigate and quantify aerosol and cloud processes on a **local to cloud system** scale
- Stier and van den Heever are on the ACPC steering committee thereby facilitating GAP – ACPC communication

**GAP**

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# Aerosols, Clouds, Precipitation and Climate (ACPC)

- Two cloud regime roadmaps: deep convection (Co-leads: Ann Fridland and Sue van den Heever) and shallow clouds (Lead: Rob Wood)
- Past workshops:
  - April 2015 at NASA-GISS in New York
  - April 2016 at the University of Oxford.
- Next workshop: 2-5 April in Bad Honnef, Germany
  - to investigate based on model simulations as to which observations offer most promise in identifying signatures of aerosol effects on clouds and precipitation
  - ultimate goal: comprehensive field campaign and associated box closure study for a GCM grid box (Rosenfeld et al 2014)

**GAP**

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