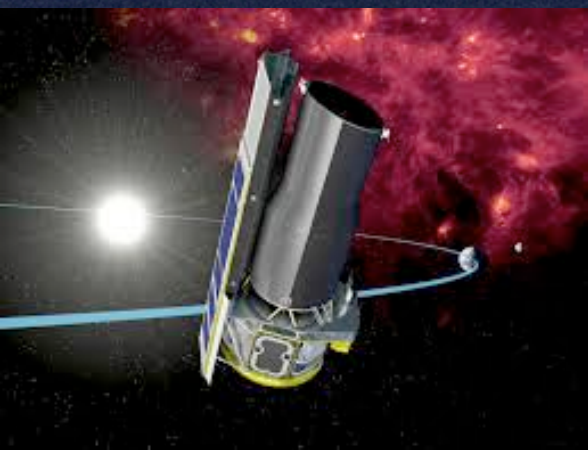


# Cosmic Origins Program Analysis Group

Ken Sembach  
(STScI)





# 2014 COPAG Executive Committee



*New!* Daniela  
Calzetti



Julianne  
Dalcanton



*New!* Dennis  
Ebbets



*New!* James  
Green



*New!* Sally  
Heap



Lynn  
Hillenbrand



David  
Leisawitz



James  
Lowenthal



Paul  
Scowen



Ken  
Sembach<sub>2</sub>



# 2014 COPAG Ex-Officio Members



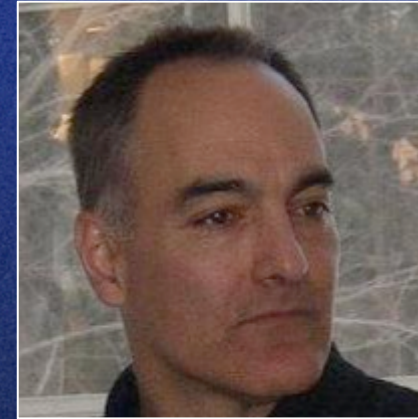
Susan Neff

GSFC COR Program Office



Mario Perez

NASA HQ



Michael Garcia

NASA HQ

COPAG members recently completing service:

Jonathan Gardner

Paul Goldsmith

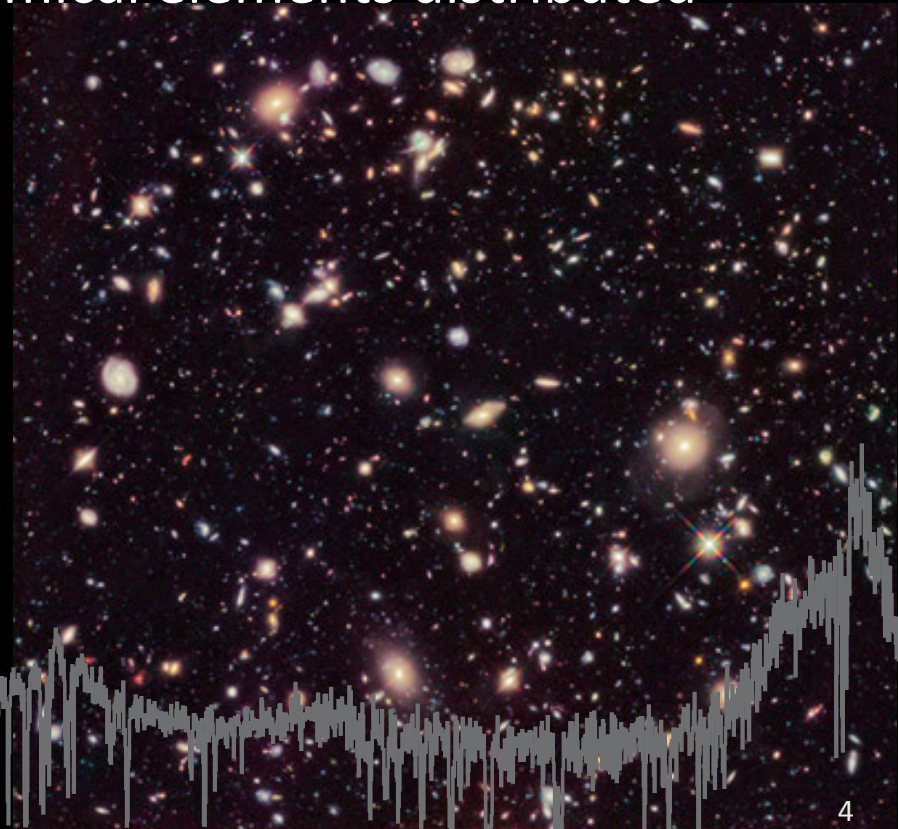
Charles Lillie

Christopher Martin



# Cosmic Origins Questions

- How did we get here?
  - How and when did galaxies form?
  - How do stars form, evolve, and eventually die?
  - How are matter and the chemical elements distributed throughout the universe?





# COPAG Tasks

- Solicit and coordinate community input into the development and execution of NASA's Cosmic Origins (COR) Program
- Analyze this input in support of the planning and prioritization of future exploration within the COR program
- Specific types of tasks include
  - Articulating and prioritizing key science drivers for COR research
  - Evaluating capabilities of potential missions for achieving COR science goals
  - Providing input and analysis on related activities (e.g., ground-based observing, theory investigations, laboratory astrophysics, suborbital investigations, data archiving, etc) needed to achieve COR science goals
  - Identifying focus areas for technologies needed to advance COR science
- All input is provided to the NASA Astrophysics Subcommittee



# 2014 Science Analysis Groups (SAGs) and Science Interest Groups (SIGs)

- **SAG #6:** Cosmic Origins Science Enabled by the WFIRST-AFTA Coronagraph
- **SAG #7:** Science Enabled by Operations Overlap of the Hubble Space Telescope and the James Webb Space Telescope
- **SAG #8:** Science Enabled by the WFIRST-AFTA Data Archive
- **SIG #1:** Far-Infrared Cosmic Origins Science and Technology Development

Interested? Contact a COPAG member  
or see us at the NASA booth here at the AAS!



# SAG #6: Cosmic Origins Science Enabled by the WFIRST-AFTA Coronagraph

- WFIRST-AFTA is baselined to have a coronagraph
  - (WFIRST SDT meeting on Thursday - Chesapeake D&E)
- Cosmic Origins science cases that take advantage of the coronagraph are to be solicited
  - To be provided as input for possible coronagraph design considerations and use cases
  - To scope the degree of community interest in COR coronagraphic science with WFIRST-AFTA
  - To develop “contingency” coronagraph use examples in case the coronagraph capabilities are reduced during development
- COPAG Lead is Dennis Ebbets ([debbets@ball.com](mailto:debbets@ball.com))



# SAG #7: Cosmic Origins Science Enabled by Operations Overlap of HST and JWST

- Engage the astronomical community in outlining the scientific case for having HST and JWST operations overlap

- Are there precursor observations that HST should do prior to JWST launch that might not otherwise be done through the regular time allocation process?

- Are there compelling science cases for simultaneous HST – JWST observations?



- Are there compelling science cases for HST follow-up of JWST observations or discoveries?

- Are there expected discoveries by other facilities in the 2020 timeframe (e.g., TESS or Euclid) that require follow-up by both HST and JWST?





# SAG #7: Cosmic Origins Science Enabled by Operations Overlap of HST and JWST

- Synthesize input received from the community
- Identify compelling Cosmic Origins science requiring simultaneous or complementary HST and JWST observations
- Determine if there are science drivers that may inform the planning of early operations of JWST or extended operations of HST
- COPAG Lead is James Green  
([james.green@Colorado.edu](mailto:james.green@Colorado.edu))





# SAG #8: Cosmic Origins Science Enabled by the WFIRST-AFTA Data Archive

- WFIRST-AFTA will produce a huge archive for COR research

WFIRST/AFTA Deep Field  
>1,000,000 galaxies in each image



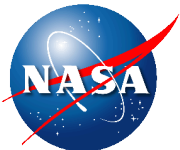
HST



# SAG #8: Cosmic Origins Science Enabled by the WFIRST-AFTA Data Archive

- Analyze how the archive is to be used and scope the data requirements necessary to conduct COR science
- Solicit community input to identify the types of investigations and the kinds of data products that are valued and needed
- Consider what other assets or efforts may be needed to maximize the science return from the WFIRST archive
  - E.g., Coordination with LSST, Euclid, or JWST; GO funding for ground-based observations or theoretical studies
- COPAG Lead is Sally Heap ([sally.heap@nasa.gov](mailto:sally.heap@nasa.gov))





# What's next for NASA Far-Infrared Astronomy?

Announcement of a new

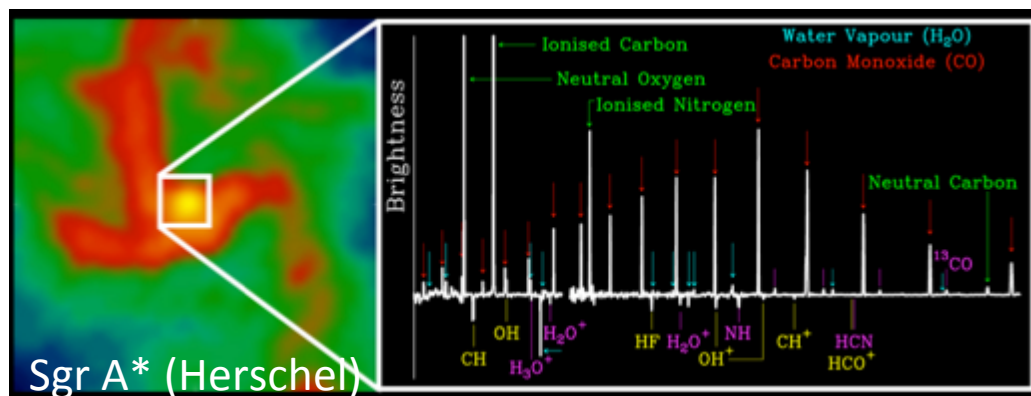
## Far-Infrared Science Interest Group (SIG)

Provides input for the NASA Astrophysics Subcommittee via the Cosmic Origins Program Analysis Group (COPAG) Executive Committee

To join or for information: [David.T.Leisawitz@nasa.gov](mailto:David.T.Leisawitz@nasa.gov)

### **Motivation and starting points:**

- 2010 Decadal Survey
- Latest results – Herschel, SOFIA...
- New science priorities
- New key technologies
- NASA Astrophysics Roadmap
- NASA budget environment

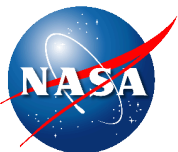


### **Mission of FIR SIG:**

Work with COPAG and US FIR community to:

- Develop plans for NASA support of FIR astronomy
- Provide input for technology development roadmaps
- Develop Design Reference Missions (DRMs)
- Explore SPICA and other options





Preliminary Announcement

# Bringing Fundamental Astrophysical Processes Into Focus: A Community Workshop to Plan the Future of Far-Infrared Space Astrophysics

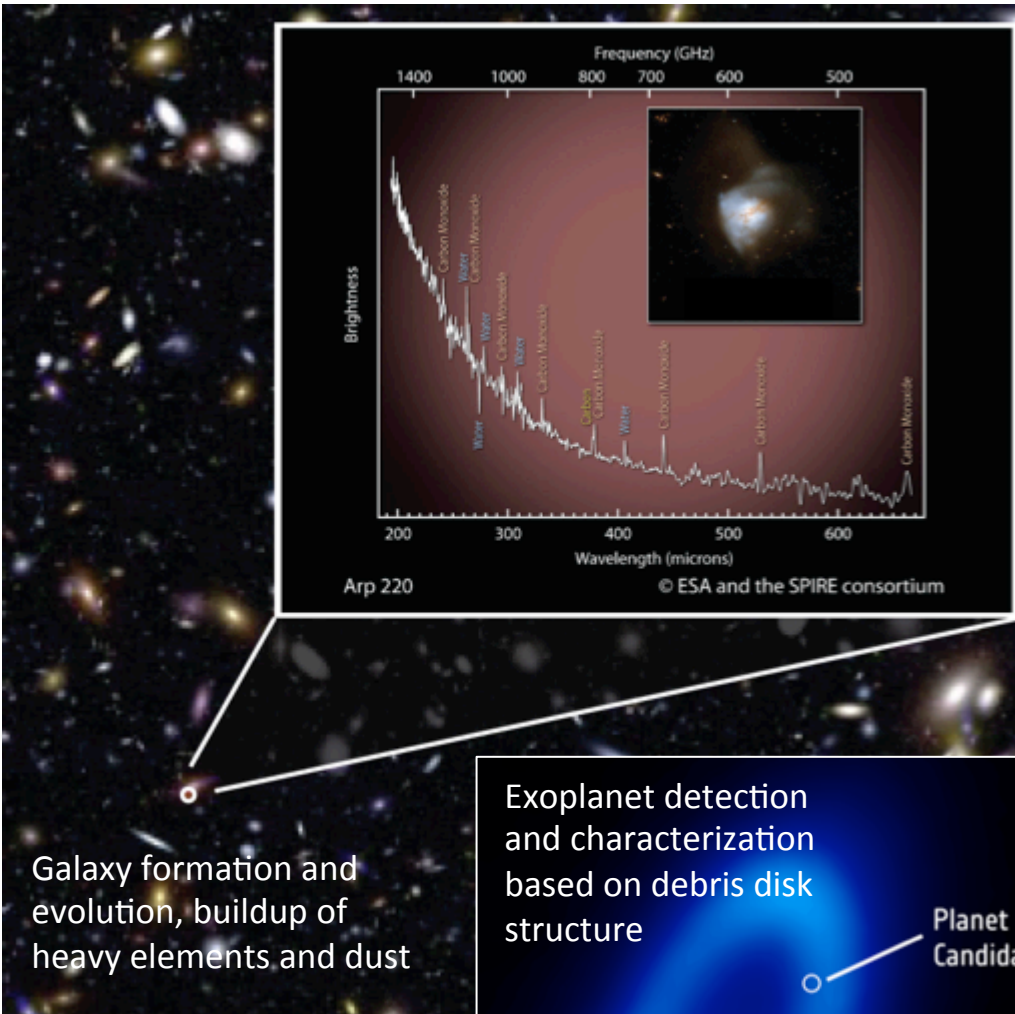
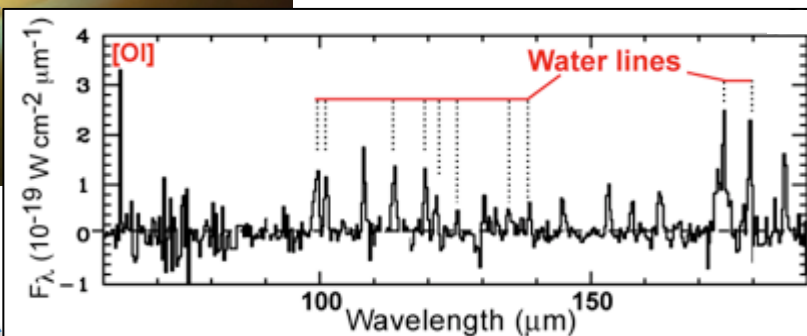
Dates: May 12 – 13, 2014

Location: Goddard Space Flight Center, Greenbelt, MD

For information, see:

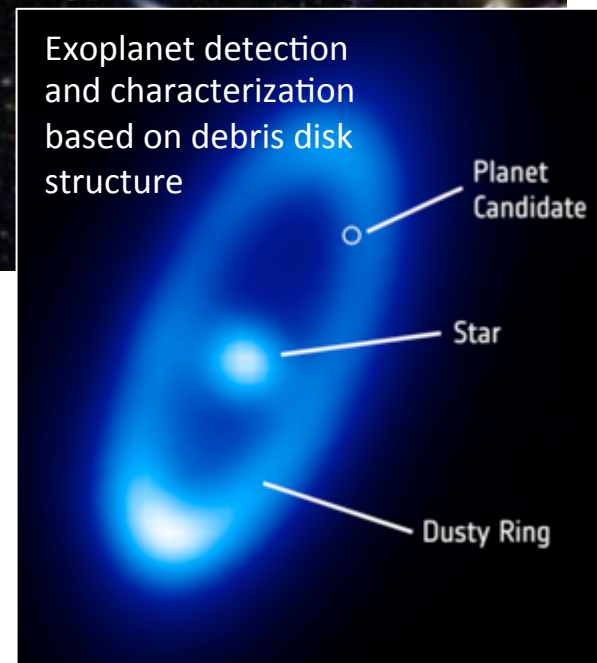
<http://asd.gsfc.nasa.gov/conferences/FIR/>

Stellar and planetary system formation, development of habitable conditions



Galaxy formation and evolution, buildup of heavy elements and dust

Exoplanet detection and characterization based on debris disk structure







National Aeronautics and Space Administration  
Goddard Space Flight Center

- Goddard Space Flight Center
- Sciences and Exploration Division
- Astrophysics Science Division

## COSMIC ORIGINS

Overview

Projects

Science

Technology

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Education

### Links

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- NASA Astrophysics Program Offices
- Request for Information RFI2012 - UV/Visible Science Investigations
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- Sign up for COR News and Announcements

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#### Objectives

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The COPAG has held open workshops for community members: at the 217th AAS meeting in January, 2011; in May 2011 at the 218th AAS meeting in Boston; in September 2011 at the Space Telescope Science Institute; in January 2012 at the 219th AAS meeting in Austin; in September 2012 at STSci; and in January 2013 at the 221st AAS Meeting. Future community workshops are also planned and will be announced.

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Telecon phone number is 888 989 1360 (toll free) Passcode 2485800  
+1 203 669 7873 (toll)

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<b>Daniela Calzetti</b>	December 2013	University of Massachusetts
<b>Julianne Dalcanton</b>	October 2011	University of Washington
<b>Dennis Ebbets</b>	December 2013	Ball Aerospace

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Joint COPAG - ExoPAG meeting on Sunday, January 5, 2014, pre-AAS » [Details](#)

**28 Oct 2013**  
The 2013 COR Program Annual Technology Report (PATR) is now available for download » [\[PDF\]](#)


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Herschel Decommissioned





**National Aeronautics and Space Administration**  
Goddard Space Flight Center

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