

Exoplanet Program Analysis Group (ExoPAG) Report to PAC

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Executive Committee

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ExoPAG: Roles and Responsibilities

- ❑ Articulate & prioritize science drivers for NASA's Exoplanet Exploration Program (ExEP) – the program within NASA's Astrophysics Division that's responsible for setting priorities, designing strategies/tactics to achieve program goals
- ❑ Evaluate capabilities of potential missions to achieve goals
- ❑ Evaluate the ExEP activities with broad community input
- ❑ Articulate and prioritize new mission technologies
- ❑ Provide findings on all related program activities including: ground-based observing, theory and modeling programs, laboratory astrophysics, suborbital investigations, data archiving, community engagement
- ❑ Host meetings (ExoPAG##) twice a year to bring the community together

ExoPAG 28

- ❑ ExoPAG28 was held in advance of DPS (Oct 2023, Texas).
- ❑ Programmatic updates from NASA HQ, ExEP (science & technology), NASA Exoplanet Archive, SIG/SAG updates, etc.
- ❑ Then focus talks on timely issues that are relevant to the attendees.

<https://exoplanets.nasa.gov/exep/events/461/exopag-28/>

October 1, 2023

Session 1 (Chair: Natalie Hinkel and Diana Dragomir)

Speaker

Welcome + overview of SIGs and SAGs	Ilaria Pascucci
Planetary Science and Astrobiology Decadal Survey	Robin Canup and Phil Christensen (Co-Chairs-Remote)
Exoplanet Program Office + Science	Karl Stapelfeldt
The ExoExplorers Program	Tiffany Kataria (remote)
What do exoplanet atmospheres tell us about planet diversity?	Sarah Moran

BREAK (20 min)

NASA Headquarters Exoplanet Exploration Program	Josh Pepper, Megan Ansdell
What do we know about Venus as an exoplanet analog?	Giada Arney (remote)
What do we know about Titan as an exoplanet analog?	Jason Barnes
What do we know about Uranus as an exoplanet analog?	Leigh Fletcher

LUNCH BREAK (90 min)

Session 2 (Chair: Ian Crossfield)

Speaker

Planet formation and migration in the Solar System, as constrained by the small body record	Will Grundy (remote)
Planet formation and migration processes constrained by exoplanet observations	Andre Izidoro
What can stellar compositions tell us about exoplanet compositions?	Romy Martinez
Geochemical evolution of terrestrial planets and biosignatures (HabWorlds)	Josh Krissansen-Totton (remote)
Star-planet interactions: Atmospheric escape in the Solar System and applicability to exoplanets (lessons from the Maven mission)	Michael Chaffin
Earth as an exoplanet: Relevant for detection of ExoEarth Candidates (HabWorlds)	Eddie Schwieterman

ExoPAG 28

- ❑ Because ExoPAG28 was before DPS, we had many excellent invited talks from the planetary science community.
- ❑ Interest from the exoplanet community and from the executive committee in having one of the semi-annual ExoPAG meetings in connection with a large planetary science/interdisciplinary meeting (e.g., DPS, AbSciCon...)
- ❑ Integrate the ExoPAG meeting within the conference program (as opposed to a standalone meeting like the DPS and more often at AAS meetings)
- ❑ Advertise meetings earlier, more broadly, and to a diverse community
- ❑ Targeted funding for **cross-disciplinary exoplanet science**

SIG3 “Exoplanets Solar System Synergies”

Chairs: Vikki Meadows & Kathy Mandt

- Gathering community input on key ExoSS synergies: <https://tinyurl.com/yxbnyfwu>. They are focusing on key impediments to cross-disciplinary collaborations and potential solutions, scientific areas of high priority for synergistic study, what SS scientists need from the exoplanet community and vice versa.
- ExoSS Slack Channel – news updates, paper-sharing, collaborations, all are welcome! 170 members (If you would like to join: meadows@uw.edu)
- Run monthly SIG3 Tutorials that explain key concepts within the different communities. Talks have been recorded and are available here: <http://nexss.info/community/exoss-synergy>
- Helped coordinate speakers for the ExoPAG28
- **Upcoming: Develop a community review paper that will find overlaps and synergies, and link the science initiatives of Astro2020 and Origins, Worlds and Life 2023**

ExoPAG: Overlap with the PAC

- ❑ Exoplanet research is inherently an interdisciplinary field that requires input and knowledge from planetary science, cosmochemistry, geology, Earth science, (astro)biology, and much more!
- ❑ It is the goal of the ExoPAG to strengthen the connections/collaborations between the astrophysics and planetary science communities in exoplanet science.
- ❑ Currently working on improving opportunities for inviting planetary science speakers (early career, mission teams, etc), creating opportunities for OPAG and VEXAG, dive into more theory that connects planetary science and exoplanets, explore ExEP science gaps on SS bodies,

ExoPAG30

ExoPAG30 will be [before AbSciCon](#) (May 5th 2024, Rhode Island) -- may include talks from OPAG, two cross-AG working groups, and "brain dates".

BREAK (20 min)		10:40 AM
The search for Life in the Solar System	Lori Glaze (Director Planetary Science Division)	11:00 AM
VEXAG: the potential for past habitability on Venus and science gaps	Noam Izenberg (Chair, Applied Physics Laboratory) or Debra Buczkowski (Deputy Chair, APL)	11:30 AM
MEPAG Mars Exploration Analysis group: searching for life on Mars - science gaps	Yingst (Chair, PSI)	11:50 AM
Brain dates 1 [Pre-Event Planning: Prior to the event, participants are invited to list topics they are knowledgeable about and topics they wish to learn more about on a dedicated platform or app associated with the event OR the EC comes up with a list of topics]	Focus on open science Qs not proposals (small groups with half astro and half planetary). Put together a list of themes	12:10 PM
LUNCH BREAK (90 min)		12:30 PM
Topic: TBD)	Speaker	Time (CDT)
NExSS overview and WGs focusing on the search for life beyond Earth	Ofer Cohen or other Leads	2:00 PM
Cross AG IDEA working group	Maggie McAdam (NASA Ames) & Parvathy Prem (APL)	2:20 PM
OPAG goals in relation to habitability in the outer Solar System	Amanda Hendrix (Chair, PSI)	2:40 PM
Cross-AG Ocean Worlds Working Group (QWWG)	Cynthia Phillips or Michael Bland	3:00 PM

PS Decadal Survey

- ❑ As one of the PAC AGs, the ExoPAG wanted to express support for the PS Decadal Survey science priorities and the top line science budget.
- ❑ Feedback from multiple stakeholders inside and outside of NASA is that they do not see the PSD science community uniting behind our Decadal Survey priorities (e.g., as compared to the Astrophysics community) and thus, the top line science budget
- ❑ While we understand that there might be concern for the overall budget, we believe its important to back the planetary science indicated as the most crucial, influential, and timely in the Decadal Survey.