

Targets Q & A: Habitable Worlds 2017 (November 13–17, 2017 at Wyoming USA)

Yasunori Miura (Paper #4153 author)

Following the goals of NExSS to investigate the diversity of exoplanets and to learn how their history, geology, and climate interact to create the conditions for life, and corresponding biosignature detection, the workshop aims to address these questions:

1. What does it mean to be habitable?

(A) **Habitable world means “dynamic process with start and end, followed its continuity”.**

2. What conditions are needed for habitability and how do those conditions arise?

(A) **Mobility among vapor, liquid and solid states for its continuous and global process.**

3. What are the indicators of these conditions and their histories?

(A) **Rapid high temperature and pressure condition to be formed at global fluid-world.**

(A) **The dynamic process is used to be discarded with remnants of quenched glasses**

4. How can we observe these indicators?

(A) **These indicators are dynamic process of active planets, direct fluid-water system above solid-planet, remained ocean floor sediments (carbonates) of global ocean system.**

(A) **Possible telescopic observation is carbon-bearing signals (element, ions and molecules).**

The breakout session "**How Do Star and Protoplanetary/Debris Disk Compositions Affect Planet Compositions?**" Tuesday, November 14, 2:00-4:30 p.m. We plan the topics:

1. What is the most up-to-date picture of host star compositions and their relation to planet properties? (review)
(A) Direct connection of ion, plasma and elements from star to planet (at extreme states).
2. What is the most up-to-date picture of protoplanetary/debris disk compositions and their relation to planet properties? (review)
(A) Main picture of dynamic mixing and selection be be formed solid-small bodies widely.
3. How do various planet formation mechanisms impact planet composition? (contributed)
(A) Impact mixings at various extreme conditions produce different planets comparatively.
4. What assumptions can we confidently make about the similarity of star-disk-planet compositions (for small, terrestrial planets)? (contributed) **(A) Proposed model to form volatiles system above solid rock system globally, supported giant planetary impacts.**
5. What assumptions still need testing, and what star/disk simulations or observations would be most informative for future characterization of habitable systems? (discussion) **(A) Carbon-bearing volatiles and solid-rocks might be formed fluid-water system on planets.**

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The breakout session "**Exoplanet Community Modeling Tools Workshop**" The session is meant as an opportunity for all members of the exoplanet community to share and discuss the wide range of software already developed or in development, and how we can better collaborate and communicate. Monday, November 13, 2:00–4:30 p.m

We will have time allotted for demos of tools and software, and ample time scheduled for interacting with the tools and asking questions of the developers.

(A) We have no plan of demos of software and tool for asking questions.

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No RSVP is needed if you only want to come, learn, and play with the tools presented.

<https://www.hou.usra.edu/meetings/habitableworlds2017/>

(Organizer) Avi Mandell and Giada Arney

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Habitable Planets with Dynamic System of Global Air-Liquid-Solid Planet and Life [#4153]

Habitable zone is **dynamic three phase states (air-liquid-solid)**, which will be obtained in water-planet with volatile exchanges. **Water and carbon-bearing grains** at older extraterrestrial stones suggest that there are **no global ocean water systems**.

Summary:

- 1) **Two dynamic systems of water-Earth** and life are expressed by constituent equations of **air-liquid-solid factors**.
- 2) **Cyclic systems of life and Earth** are **not stably obtained** because of **continuous changes** within **macro-inorganic system of global planet**.
- 3) **Quasi-life of fossil (solidified stone)** can be remained by **life relicts**, but usually replaced to **bio-minerals** (carbon, silica, apatite and calcite carbonates) in **active Earth system**.
- 4) **Habitable zone** in this study is **dynamic process zone** with **three phase states** (air-liquid-solid) of **large to smaller ranges** for **active material exchange globally**, which will be obtained in **multiple circulated systems** of **water-planets** with **effective reaction** for **volatile (water, carbon)-bearing exchanges**.
- 5) **Water and carbon-bearing grains** at **older stones** of samples from **the Moon, Mars and Asteroids** suggest that there are **no global ocean water system** on these worlds because of **stopped states for longer times relatively** (with **less dynamic and circulated system**).