

# DWG 1 — Atmospheres, ionospheres, and exospheres

---

At first N2 meeting represented by

Markus Fränz  
Björn Grieger  
Tero Siili

# Desired information

---

- To which data so EuroPlaNet people have access?
- What models do EuroPlaNet people use/have experience with?
- Living review documents

# Joint discussions

---

...desired with the DWGs on

- surfaces,
- magnetospheres,
- exoplanets.

# Science cases — first suggestions

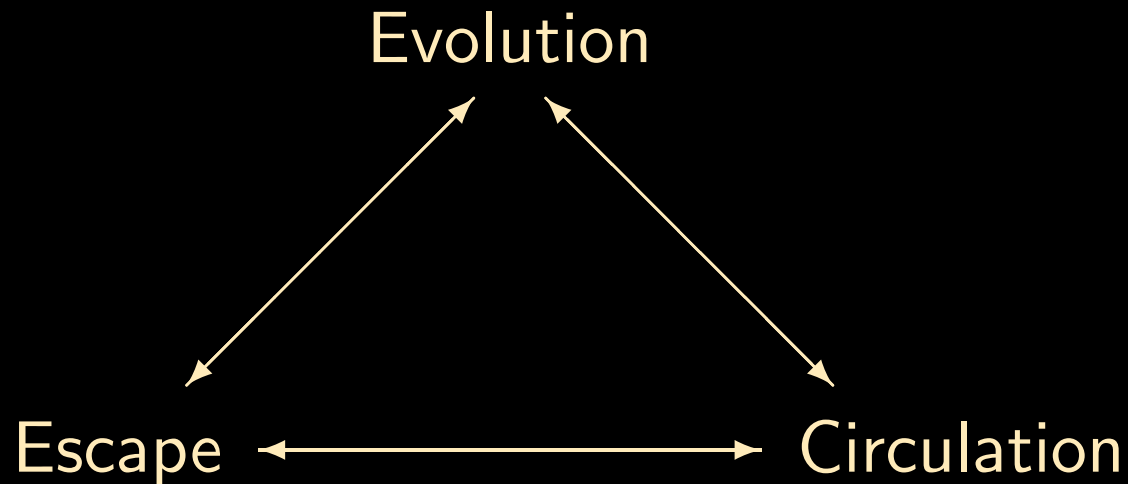
---

Restricted to solid bodies with atmospheres (just for the purpose of this meeting).

- Sources and sinks of H<sub>2</sub>O
- Atmospheric vertical structures (→ Probes)
- Dynamics, esp. general circulation
- Exobase densities and compositions
- Influence of internal fields on escape
- Influence of ionospheric structure on escape
- Evolution of atmospheric escape
- Life cycle of Titan tholin
- Evolution of atmospheres
- Climates, i. e. atmospheric circulation

# Atmospheres

---



Not really considered so far:

- Chemistry
- Surface

Related to surfaces DWG and laboratory experiments.

# Target-phenomenon space

---

	Escape	Circulation
Earth	●	●
Mars	●	●
Titan	●	●
Venus	●	●
Triton	●	●
Pluto, Charon	●	●
Mercury	●	
Earth's moon	●	
Galilean moons	●	
Asteroids	●	
Exoplanets	●	●

# Escape

	Aims	Current mis- sions	Suggested missions
Mars	Ionospheric/exo- spheric character- istics Measurements at high solar activity Hot particle detec- tion	Mars Express  Rosetta flyby	Mars Escape Orbiter
Titan	Exospheric charac- teristics Measurements at high solar activity	Cassini	Cassini extended mission
Venus	Exospheric charac- teristics	Venus Express	“Venus Escape Orbiter”
Pluto, Charon	Exospheric charac- teristics	New Horizons	
Mercury	Exospheric charac- teristics	Messenger, Bepi Colombo	

# Circulation

	Aims	Current mis- sions	mis-	Suggested mis- sions
Mars	Vertical profiles (meteorology + radiance)	(Mars Express, Phoenix)		Entry probes (ARCHIMEDES, MetNet)
	Long term sur- face observations	(Viking lan- ders)	lan-	Surface Net- work (MetNet)
Titan	Vertical profiles (meteorology + radiance)	Cassini, Huy- gens	Huy-	
	Long term in situ observations	(Ground based observations)		Aerial and/or surface plat- form
Venus	Vertical profiles (meteorology + radiance)	(Venus press)	Ex-	Entry probes
Exoplanets	Tidally locked Earth-like plan- ets	General lation elling	circu- mod-	Spectral char- acteristics of atmospheres