惑星大気学　月曜4限 14:55-16:40

今村（新領域，理学系兼担）講義予定

5月 15日，29日（この日は吉岡先生）
6月 5日，12日，19日，26日

中性大気の物理・化学について解説

・大気の鉛直構造（熱力学、放射輸送、放射対流平衡）
・惑星大気の力学
・大気化学と雲物理
・大気大循環
・観測手法

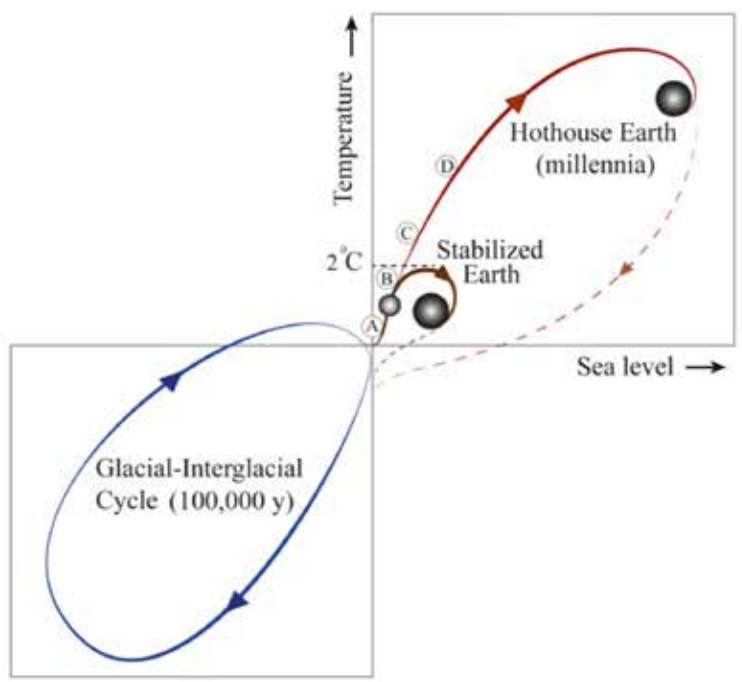
講義資料はITC-LMSに掲載予定

重要

今村担当回では、ITC-LMSに出席確認を兼ねた課題を載せるので、回答を1週間以内にITC-LMS上で提出すること。

In Imamura‘s class, after each lecture, a problem will be posted on ITC-LMS to confirm attendance. Students are required to submit their answers within one week.

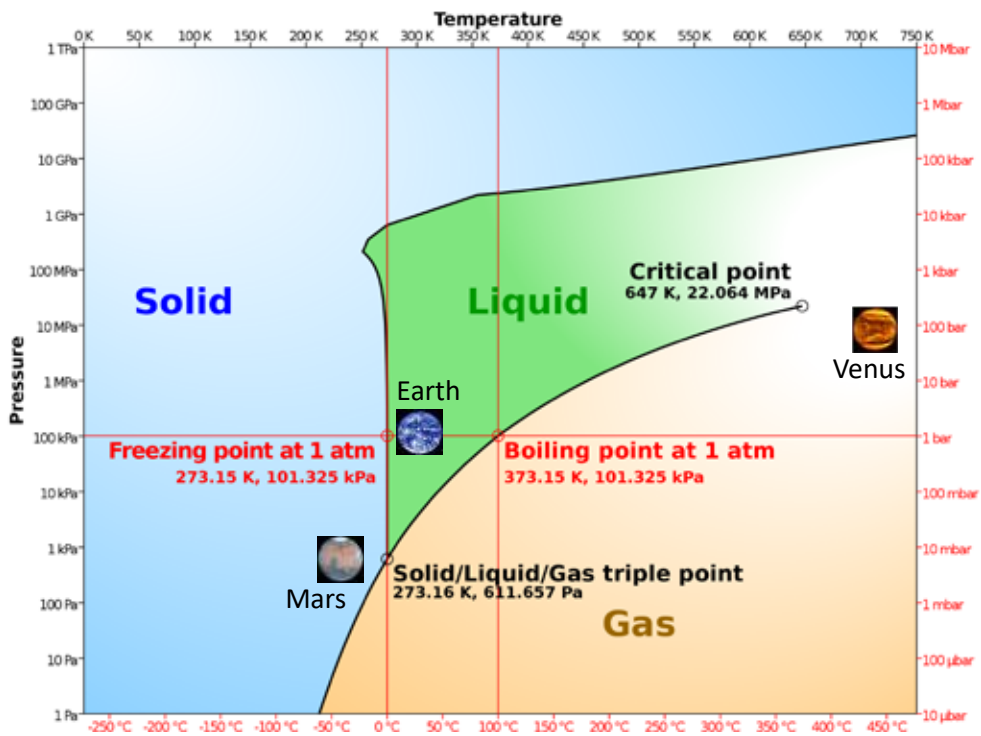
Possible future pathways of the climate against the background of the glacial–interglacial cycles



Steffen et al. (PNAS, 2018)

Phase change diagram for water

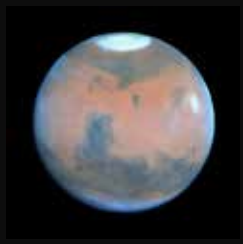
From Wikipedia



Energy budget and temperature

	Solar flux (W/m^2)	Albedo	Absorbed energy (W/m^2)	Greenhouse effect	
				off	on
Venus	2617	0.78	576	-50℃	470 ℃
Earth	1370	0.30	959	-18℃	15 ℃
Mars	589	0.16	495	-57℃	-53℃

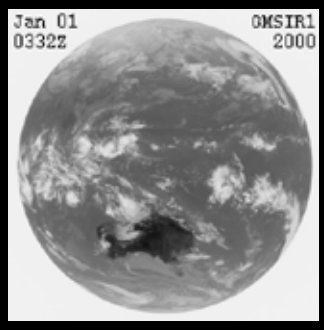
Clouds and albedo



Albedo 0.78 0.30 0.16

Atmospheric circulation

Venus



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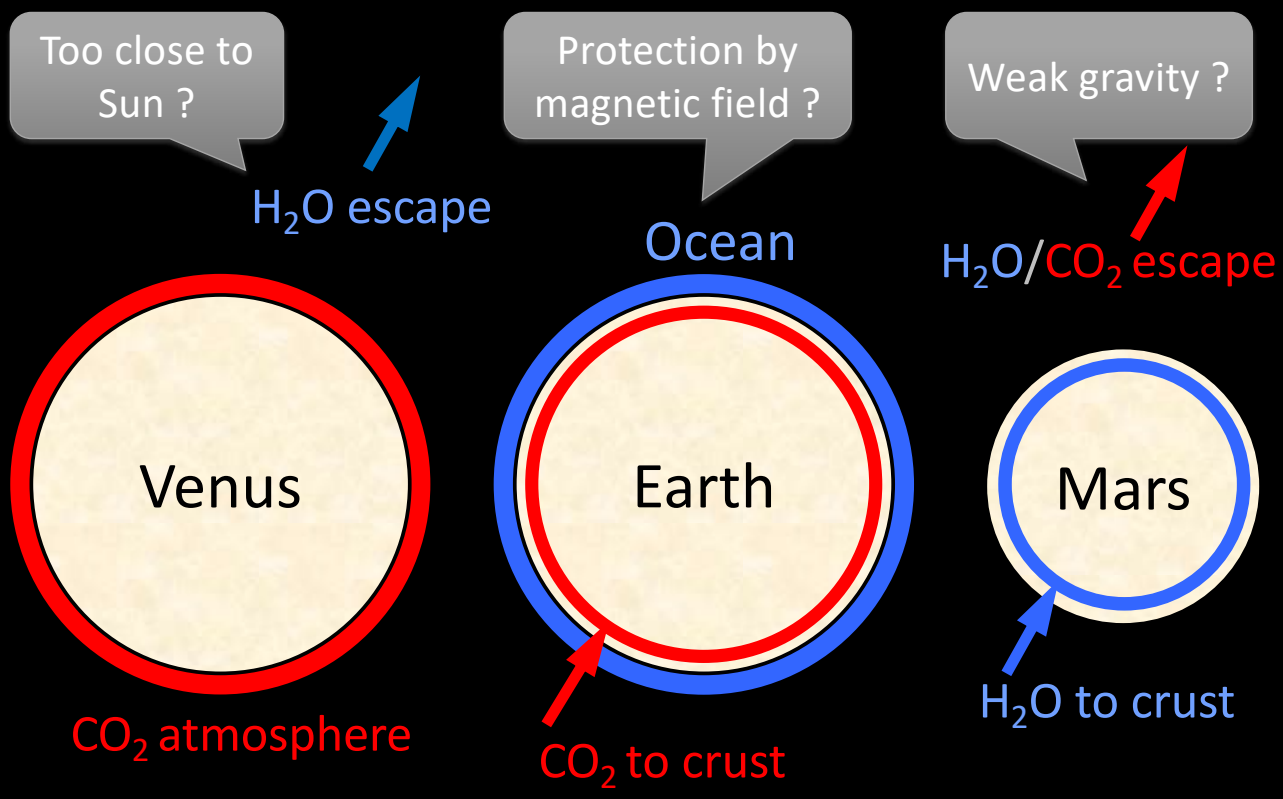
Earth

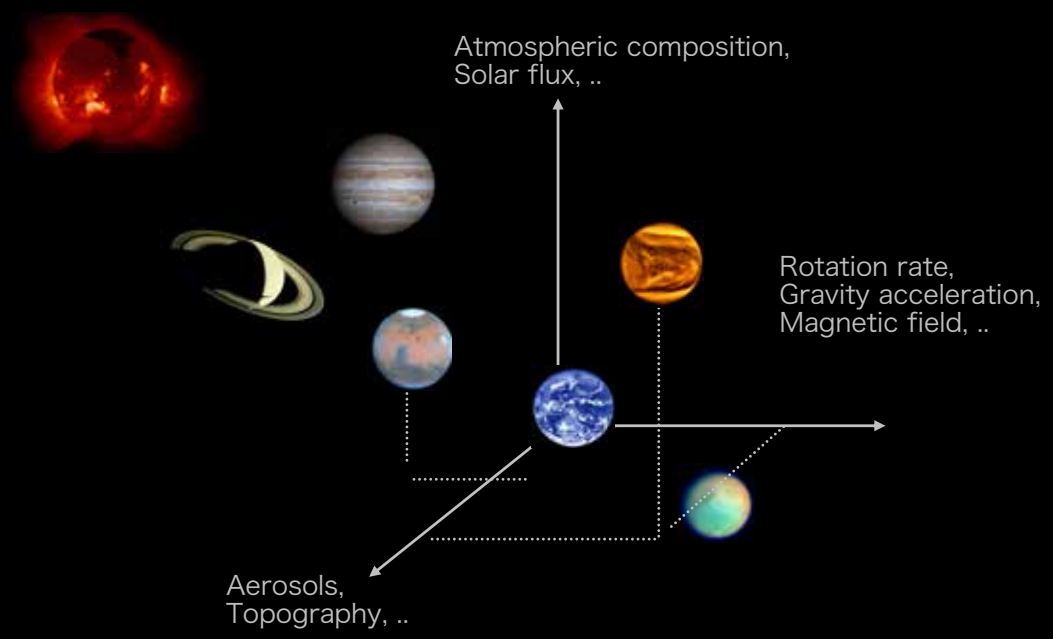
Mars

Jupiter

Possible scenarios



Understanding the diversity in a multi-dimensional parameter space



Questions

- How are the compositions, amounts and albedo of those planetary atmospheres controlled ?
- How does the climate system work and evolve with time depending on the condition of the planet ?
- How dose a star-planet system evolve with time?