

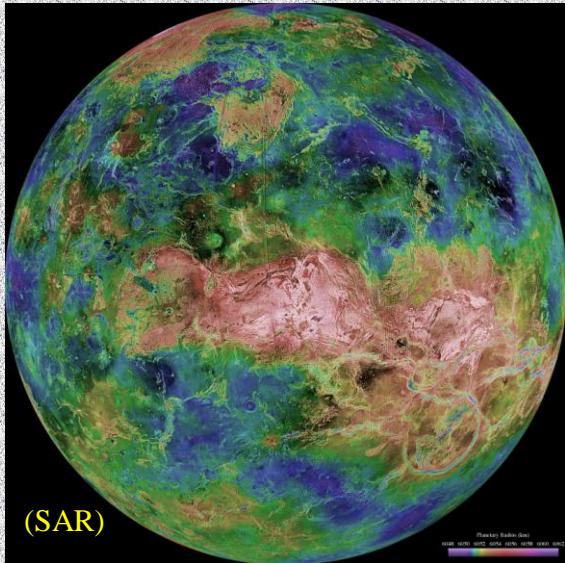
LOCAL AND GLOBAL SYSTEMS ON VENUS AND EARTH: LESS ACTIVITY ON AIR-PLANET VENUS FOR CHANGE OF VOLATILES

Yasunori MIURA (Yamaguchi University) and Takao Tanosaki (Kogakuin University)

Mercury



Venus



No air

Earth



Mars



Air (Cold carbon-rich)

Air (Hot carbon-rich)

Air (Pressed water with less carbon)

NASA

Images: NASA

Y. Miura (2016)

Introduction

No clear materials from Venus!
Less activity on solidified Venus?

Air source of carbon dioxides of air-planets

Venus shows exothermic air with carbon!
No deposits for hot Venetian air?

Relation of activity ranges of material-states

Global water is pressed by air and solid systems!
Local water ions are stored in all solidified rocks!

Main causes for activity range of materials

All space rocks include volatiles by impact process!
Water makes crystals (Earth) or less crystals (Venus)!

Solidified evidences of material-state changes

Texture of phenocryst (solid) & groundmass (liquid)!
Irregular texture is formed by impact melting (Exp)!

Conclusion

New model of local impacts for rocks with volatiles!
Glassy solids of rock textures are from impact melting
(on Mars-Earth & Asteroids; possibly on Venus)!

Venus (SAR)

<Venusian Materials & Volatiles>

⇒ In this study!

Materials: ① Life, ⑤ Rock, ⑥ Crust, ⑦ Crater, ⑧ Magma, ⑨ Core, Mantle, ⑩ Interior

Volatiles: ② Water, ③ Weathering, ④ Atmosphere

Y. Miura (2016)

Top Ten Questions about Venus (NASA)

<Venus Geology & Geophysics>

- ② Surface (sea) water or interior? Weathering Process? ③ Weathering Process?
- ⑤ Different volcanic rocks and events or magma ocean?
- ⑥ Ever plate tectonics of crustal recycling? Ancient primary crust?
- ⑦ Cratering rate? An early cataclysmic bombardment? A giant impact? No moon?
- ⑧ Different rocks and internal Venusian differentiation and of magma source?
- ⑨ Overall chemical composition of Venus? Venusian core and mantle? Mineralogy?
- ⑩ Geophysical properties (heat flow, seismic activity, etc.) of the? Interior structure?

<Venusian atmosphere> ④ Composition & evolution of the atmosphere?

<Life or habitable?> ① Ever a habitable planet with sustain life?

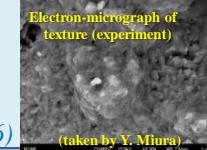
Mars (Venus) rock texture (Impact-melted process)

Phenocryst

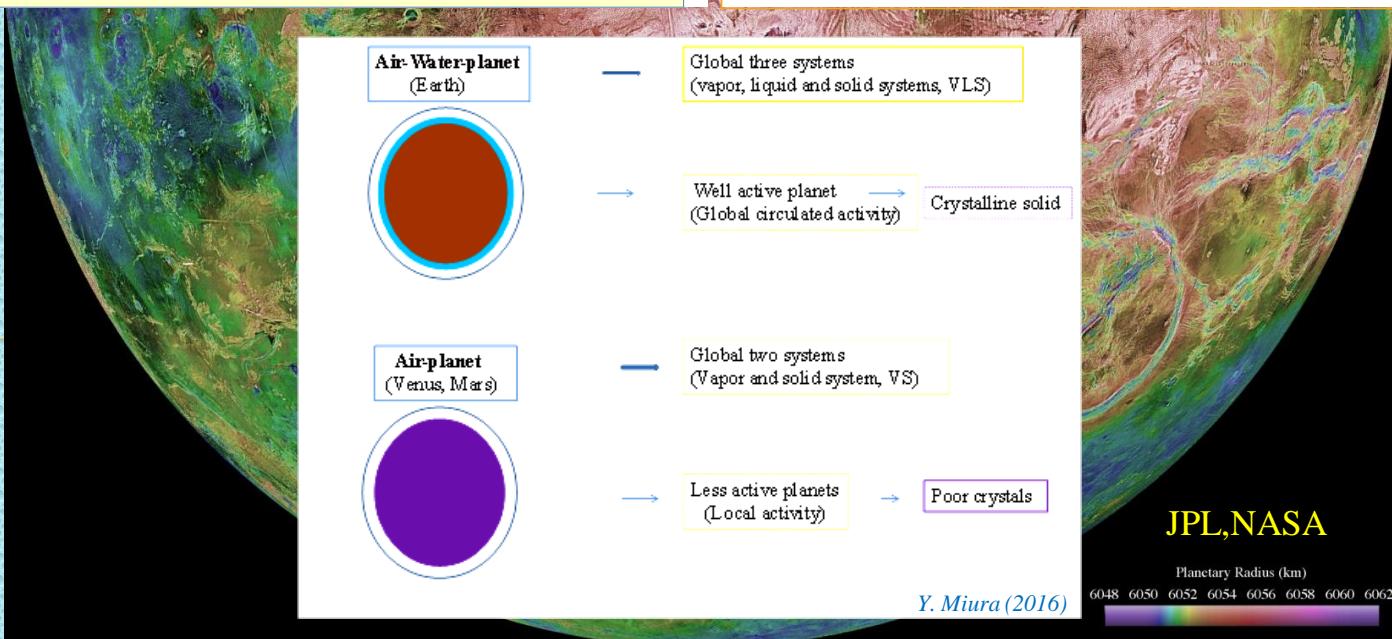
(Solids by impact melt)

Groundmass

(Fluids-solidified by impact Melt)



Y. Miura (2016)



Edited: Y. Miura