

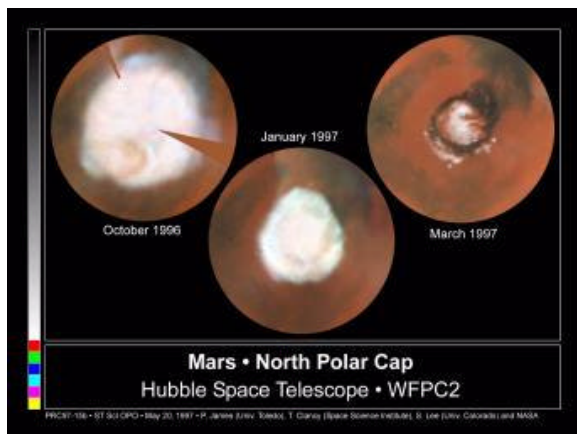
Water on Mars

Polar Ice Caps

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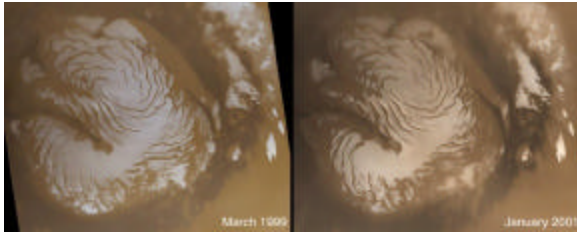
Mars has ice caps on both its north and south poles. The ice caps are made of water ice and carbon dioxide ice (dry ice). There are two kinds of ice caps on Mars: seasonal ice caps and residual ice caps. Seasonal ice caps accumulate during the winter season, and evaporate during the summer. The residual caps remain during the entire year.

Mars' seasonal ice caps are entirely dry ice that is about 1 meter thick. The southern seasonal cap measures about 4000 km across when it's largest during southern winter, and the northern cap measures about 3000 km across at its largest, during northern winter. When summer temperatures rise above 150K (-120 C), the ice sublimates (passes directly from the solid state into the gaseous state, bypassing the liquid state) into the atmosphere. Large seasonal changes in the amount of carbon dioxide in the atmosphere cause large seasonal changes, up to 30% different, in the atmospheric pressure on Mars.



Martian North Polar Cap. NASA/JPL.

Mars' residual caps vary by hemisphere. The northern cap is about 1000 km across and is made of mostly water ice. In fact, it is the main repository of water on Mars. The southern cap is much smaller, only about 350 km across. It is made of carbon dioxide ice.



Martian North Polar Cap. NASA/JPL.

The Benchmark Lessons were developed with the help of the following sources:

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Wilford, John Noble. "Photos Bolster Idea of Water, and Possibly Life, on Mars." *New York Times*, 2/20/03

Mission to Mars: Project Based Learning: Dr. Anthony Petrosino, Department of Curriculum and Instruction,
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