Frozen CO2 Could Have Formed Mars Ravines, Instead of Flowing Water

22/12/2015

French and U.S. scientists have challenged the prevailing theory about the origins of the geological formations resembling ancient river beds, using mathematical simulations pointing to seasonal sublimation of frozen CO2 – or “dry ice” – as the cause of the gullies.

Mars is currently a cold and dry world where all water is frozen and located in the polar caps or far beneath the planet’s surface.

The ravines formed less than a million years ago spotted by the Mars Global Surveyor probe in the late 1990s had been cited, however, as evidence that liquid water could have flowed on the planet’s surface in the relatively recent past.

The similarity to river beds on Earth is the main argument in favor of the liquid water theory, although scientists have not come to a consensus about what the origin of the prospective Martian rivers might have been.

In recent years, various space probes documenting changes in the Red Planet’s surface have revealed that the ravines continue to advance, despite the fact that the current climate is too cold for liquid water to exist on the Martian slopes, motivating scientists to come up with alternative hypotheses.

“When dealing with other worlds, we must take care to remember that unfamiliar processes are possible and even likely in alien environments,” Colin Dundas, a planetary scientist with the U.S. Geological Survey, wrote in a commentary in Nature Geoscience.

He added that there is a correlation between the distribution of dry ice and the regions where the gullies are most prominent, adding that the activity in the gullies appears to be seasonal, with a marked increase in activity in the Martian winter and spring, thus possibly making solid CO2 responsible for the formations.