

Science and Digital Briefs

By Shopper Editor Dave Bunting



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We can help Ukrainians with charitable donations:

Food, medical, etc. help:

Ukraine Red Cross:

shpr.fyi/ukraineredcross

Samaritans Purse:

shpr.fyi/samaritanpurse

Mercy Corps:

mercycorps.org/donate

Military help:

war.ukraine.ua/donate/



What is Ukraine?

Updating this from our Mar. 2 Shopper:

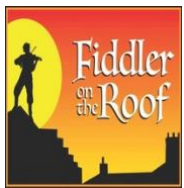
Ukraine has 44 million people, six times Washington State's 7.6 million. Ukraine, the largest country in Europe and about the size of Texas, is 232,000 sq. mi., three times Washington's 71,000 sq. mi. Ukraine is one of the largest grain exporters in the world, in wheat approximately equaling our huge total U.S. wheat export.

Ukraine is the poorest country in Europe with GDP per capita \$4,958, with 31% of its people in poverty. For comparison our U.S. GDP per capita is \$63,500 and Russia's is \$10,130.

Ukrainians are 87% Christian with 67% being Eastern Orthodox, ten percent other Christian, and nine percent Greek Catholic. The Orthodox branch of Christianity left the Roman Church in the 11th century, 500 years before the Protestants left with Martin Luther's 95 theses. Ukrainians are generally more religious than Americans and religion may be part of the reason for the Russian invasion.

73% of Ukrainians speak Ukrainian language, 11% speak Russian, 9% speak Yiddish.

Ukraine's time zone is nine hours ahead of Pacific Time. To know Ukraine time, add nine hours to Pacific Time. For example, if time here is 1:00 pm, time in Ukraine is 10:00 pm.



The play *Fiddler on the Roof* was set in the Ukrainian village of Anatevka 14 miles southwest of Ukraine's capitol city Kyiv.

Ukrainians were considered slaves, starved, and brutalized by the Germans in WWII, especially during their scorched-earth murderous withdrawal after their massive Leningrad defeat when more than 700 cities and towns and 28,000 villages were destroyed with the people brutally massacred. Five to seven million Ukrainians perished. Over 100,000 Ukrainians ended up fighting with us against the Nazis with the Polish Army.

Ukraine's cold war 130 ICBM's and 1,700 nuclear warheads, the most in any Soviet state and the world's third largest nuclear arsenal, bigger than Britain, France and China combined, were removed from Ukraine by 1996 and disassembled in Russia. Ukraine was assured at the time by President Clinton and others in the "Budapest Agreement" that the United States and Western powers — so certainly at least the United States and Great Britain — that **Ukraine would not be left to stand alone and face a threat should it come under one.**

The **Donbas separatist area** (dark red on the map) when the war started was about 10,000 sq. mi. with 4 million population, roughly the population and size of Western Washington State. The Russians have invaded out from there and now control territory so it's size now is probably at least three times larger. The Russian-invaded Ukraine region contains some of the largest oil, natural gas and rare metals deposits in the world.

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Methane is not proof of biological life

The first whiff that humans catch of life beyond Earth may be methane, but scientists will need to tread carefully before declaring a discovery based on the chemical.

While methane has long been considered a potential biosignature, there are a number of nonbiological processes that can produce the gas, from volcanic eruptions to asteroid impacts. So the U.C. Santa Cruz researchers also focused on reducing the likelihood of false positives when identifying atmospheric methane as a biosignature.

For example, on Saturn's moon Titan, there are oceans of methane, and the rocky solid ground is apparently mostly frozen water (ice). Recall that we sent a mini-satellite Huygens parachuting down onto its liquid surface that took pictures right to the surface. Sadly, it apparently sank into the surface which stopped its sensing activity including its transmissions about what it found. But there is so much methane found there on Titan and on many other planets and moons that it is very unlikely that such large volumes of methane can have been created by biological life. Methane must be created in such huge volumes by other, as yet mostly unknown, non-biological activity.

Astronomers refer to methane as an "organic" substance simply because it contains carbon, leading to false assumptions that it is created by biological activity. Methane is not organic in the sense of biological activity though it is produced by rotting biological substances and animal flatulence.

If an exoplanet's atmosphere contains methane, the chemical could be a sign of life — as long as planetary conditions meet certain criteria. Researchers from the University of California, Santa Cruz, have now established a framework for those conditions to guide scientists evaluating alien worlds. The analysis is well-timed since NASA's recently launched James Webb Space Telescope should be able to detect atmospheric methane at certain alien worlds.

In the case of a small rocky planet orbiting a star like our sun, the researchers found that atmospheric methane is more likely to be a biosignature (a sign that indicates past or present life) if the planet meets three conditions: if there is also atmospheric carbon dioxide, if the atmosphere has more methane than carbon monoxide, and if the planet is not water-rich.

Info: shpr.fyi/methanenotbio

Check out this week's Bible Readings on page 6 which includes Jesus' command at the Last Supper, commemorated next week Maundy Thursday April 14 ("Maundy" is derived from the Roman word for "command"): ***"Then he took a loaf of bread, and when he had given thanks, he broke it and gave it to them, saying, 'This is my body, which is given for you. Do this in remembrance of me.'*** Luke 22:19 NIV

Dave Bunting, Apr. 4, 2022
References in links below items.
See these columns on my blog
daverant.com