More Surprising Discoveries in the Solar System

'Surprise' is a common expression spoken by astronomers who gather observational data on the solar system. The latest surprise occurred when the Jupiter probe from the Galileo satellite descended for 58 minutes through Jupiter's upper atmosphere on December 7, 1995.

Jupiter, the largest planet in the Solar System.

As the probe descended, it failed to pick up the three-tiered cloud layer that atmospheric scientists had postulated. The density of the upper atmosphere was also much greater, and the temperature and the wind speed were significantly higher than previously thought.[1,2] Winds up to 540 km/hr (330 mph) were detected. Furthermore, they did not decrease downward in the atmosphere as expected. This measurement suggests that the winds on Jupiter are powered from its interior heat and not by absorption of sunlight and the latent heat, release from the condensation of water vapour.

Water vapour was in surprisingly short supply. This is likely why much less lightning was detected. Scientists expected significantly more water vapour than indicated from the amount of oxygen on the Sun because:

> *'Jupiter, like the other planets, formed from gas and dust that cloaked the infant sun. At Jupiter's chilly location, 778 million kilometers from the sun, any oxygen would have combined readily with hydrogen to form ice. Therefore, scientists reasoned, the concentration of water in Jupiter must be at least as high as the concentration of oxygen on the sun.'*[3]

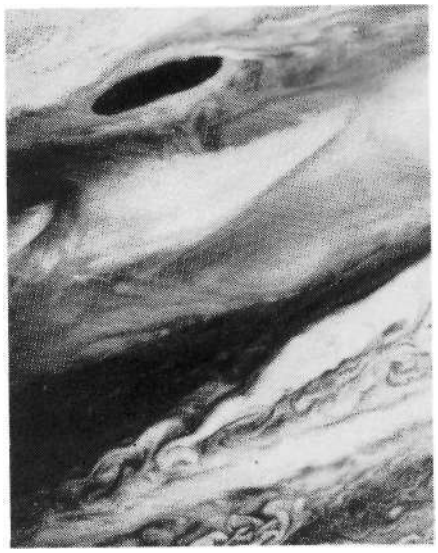
Some investigators are now suggesting that the probe went through a dry hole in the atmosphere. These 'dry holes' are considered rare, occupying well under 1 per cent of Jupiter's atmosphere.[4] However, this is unlikely due to Jupiter's persistent winds, which should thoroughly mix the water vapour throughout the atmosphere.[5] Further analysis and checking for possible errors has sustained the conclusion that Jupiter's atmosphere contains only one-fifth the water vapour as expected from the solar abundance.[6] Atmospheric scientist Andrew Ingersoll of the California Institute of Technology says this result is overwhelming.[7]

Another perplexing result of the Jupiter probe is the chemical composition of the atmosphere, which should be homogeneous. The abundance of hydrogen sulphide is about one-half that assumed; neon is an order of magnitude less than the solar abundance; and there is less carbon (as well as oxygen as discussed above in regard to water vapour) than previously surmised.[89] Researchers were disappointed, of course, that there is a paucity of complex organic molecules, which laboratory experiments had suggested should be present. There is also a significantly higher abundance of xenon and krypton, which are difficult to explain.[10] To top it off, nitrogen was ten times the expected abundance.[11] Preliminary results had indicated helium was about one-half the expected abundance, but after reanalysing the data, astronomers concluded that the correct amount was there all along.[12] Fred Taylor of the University of Oxford, who worked on the experiments, sheepishly says:

> *'This sort of thing often happens. It's just a question of having a more careful look at the data.'*[m]

All these chemical measurements are a surprise because scientists believe that the solar system is a product of a collapsing homogeneous dust cloud. The chemistry of the atmosphere was supposed to reflect this origin, modified by such processes as the addition of chemicals from the bombardment of comets and asteroids over a 4.5 billion year period:

> *'Thus, by accurately determining the composition of Jupiter, scientists believe they can obtain a better understanding of the formation of the planets, which*



Composite image of the Jovian atmosphere.

occurred 4.5 billion years ago, as well as their subsequent evolution.'[14]

Now, astronomers need

'. . . to rethink their theories of Jupiter's formation and the nature of planetary evolution processes. . .' due to this *'. . . series of startling discoveries . . .'*[15]

Already, scientists are developing *ad hoc* explanations for the chemical surprises. Although the data are said to be of high quality, one investigator even suggested that the mass spectrometer may have given discrepant measurements.[16] Maybe the real reason for so many surprises from the observational data of Jupiter's atmosphere is because the solar system was not formed from a collapsing dust cloud but was specially created.

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Latin Lizards: Logos vs Lottery

Today, the various species of *Anolis* lizard on Puerto Rico include ones small enough to forage for insects at the ends of branches, also a greenish variety better able to hide in the leaves, and a brownish version well camouflaged on tree trunks and the ground. Just as for Darwin's finches, it can reasonably be inferred (and creationists could agree) that all the present-day species descended from an original species (possibly only one pair) invading the island.

It is not difficult to conceive of how such specialisation occurred, with the lizards adapting via selection acting only on the genetic information present in the original population. The originally less-specialised 'ancestor' *Anolis* lizard was most likely medium-sized and able to forage for insects both on the trees and on the ground, with the information for both green and brown colouring already present in varying degrees.

The splitting off of such daughter populations, each with less information (as a whole population, not necessarily as individuals), does not involve any 'evolution' in the sense of new genetic information arising. For a smaller number of kinds on the Ark to give rise to the more numerous descendant species of today, processes like this would have had to be operative on a substantial scale.

It becomes very interesting when one discovers that exactly the same pattern as on Puerto Rico is found for lizards of *the Anolis* genus on the island of Jamaica. This presents a *prima facie* problem for current evolutionary theory; how can evolution, if it is a largely unguided lottery depending on chance mutations, take exactly the same paths independently? The two islands *'. . . have important differences in their plants, predators and climate'*.' Even if the selection pressures were identical, it would still require the same mutations to arise by chance over large stretches of time. Could they have evolved in one place and then independently migrated as separate populations to the other? Work on mitochondrial DNA by Jonathan Loso of Washington University in St Louis, Missouri, suggests that this was not so — the ancestor *Anolis* species was somewhat different for each island (perhaps the consequence of prior speciation in the creationist view).

However if, as the creationist assumes, the genetic potential for at least most of such adaptive change was already present by design, it is no surprise to find the same sorts of changes. For example, if the ancestral lizard species had the information enabling both green and brown colouration, then whatever the other ecological pressures might be (so long as there were trees), it would not be unlikely for both green and brown daughter species to arise. Similar arguments would obtain for all the other parameters.

The *Anolis* lizards of Puerto Rico and Jamaica therefore are more consistent with the creationist/pre-adaptationist viewpoint. Commenting on this situation, Oxford zoologist Paul Harvey is reported as telling the prestigious British Association recently that *'Lizards don't seem to respect evolutionary theory.. .'*.[2]

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