

hepatitis C cases in the early, acute stages because the antibody takes months to develop, notes molecular virologist Daniel W. Bradley of the Centers for Disease Control's Hepatitis Branch in Atlanta. Bradley says he and his co-workers are working to develop other assays for the acute disease as well as a vaccine.

To make the test, the Chiron researchers stitched together three hepatitis C viral clones and inserted them into yeast, which then began making a viral protein from the foreign genetic material. Antibodies to the virus bind to the protein and become visible after a color-producing reaction with another antibody, enabling scientists to use the manufactured viral protein to test blood samples for the hepatitis C virus, the team reports.

The test gave a positive result in six out of seven blood samples known to cause non-A, non-B hepatitis in chimpanzees and a negative result in all seven control

samples, demonstrating that it detects antibody in infectious samples, Houghton says. And when mixed with blood from 10 prospectively studied transfusion recipients diagnosed with non-A, non-B hepatitis, the test showed that all developed antibodies within a year after infection; for nine, the test picked out a positive blood donor. No such antibodies were detected in blood from 43 people infected with other known hepatitis viruses, he says.

Further use of the test should shed light on whether other agents can cause non-A, non-B hepatitis, Houghton says. Other studies already indicate that a significant portion of the cases may be caused by mutant forms of the hepatitis B virus (SN: 1/28/89, p.52).

The test is now in clinical trials, which should be completed by June, and Chiron plans to apply to the Food and Drug Administration to market the test by the end of the summer, says company spokesman Larry Kurtz. — I. Wickelgren

Recent ocean warming: Are satellites right?

Satellites have detected a significant warming in Earth's oceans between 1982 and mid-1988 that conventional methods have underestimated, reports Alan E. Strong from the National Environmental Satellite Data Information Service in Suitland, Md. But another researcher who works with the same measurements sees the purported warming as a largely artificial one created by biases in the satellite information and by the brevity of the record.

According to Strong, who presents his analysis in the April 20 NATURE, "The global ocean is undergoing a gradual but significant warming of [approximately] 0.1°C per year, whereas the trend obtained for the same period from conventional data sources (ships and buoys) is about half that magnitude."

Satellite measurements for ocean temperature go back no farther than 1982. While this relatively short observation period makes it premature to use satellite data to detect long-term trends, such as a greenhouse warming, "we may just be beginning to witness the onset of this warming through satellite surveillance of ocean-surface temperature," says Strong.

Yet Richard W. Reynolds of the Climate Analysis Center in Camp Springs, Md., says he is "flabbergasted" by the reported warming in the satellite data. "I think this whole thing is an error."

The controversy revolves around data taken by thermal sensors aboard several satellites run by the National Oceanic and Atmospheric Administration. These instruments measure infrared radiation emitted by the ocean, which can give an indication of sea-surface temperature once researchers perform difficult corrections for water vapor and clouds in the

atmosphere.

By checking the satellite observations against measurements taken by drifting buoys, Strong says he has corrected for the important biases in the satellite data. (Bias is a consistent tendency to overestimate or underestimate.)

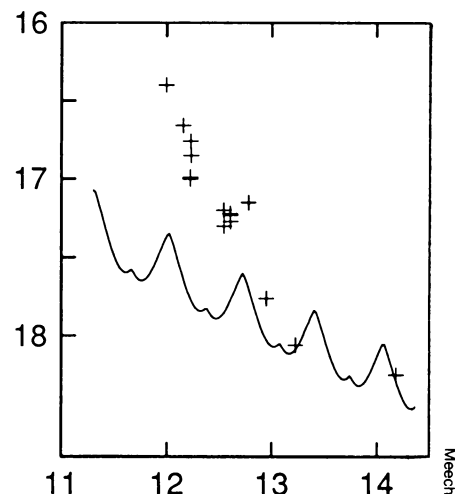
But Reynolds says significant biases remain in the satellite data. The 1982 eruption of the Mexican volcano El Chichón skewed the record by flooding the stratosphere with dust particles that absorbed infrared radiation. For the first two years of the observation period, these particles made the oceans seem cooler than they were. Other biases can affect certain regions of the globe. Right now, satellite instruments consistently indicate the Western Pacific is 0.5°C colder during day than during night, which poses a clear problem, Reynolds says.

In his paper, Strong reports that eliminating the El Chichón years of 1982 and 1983 only slightly reduces the observed warming. But Reynolds contends that these biases introduce a substantial artificial warming into the record. In his own analysis of global ocean temperatures, Reynolds mathematically blends satellite measurements with those taken by both ships and buoys, a technique he says removes the satellite biases. The blended record shows almost no temperature rise between 1982 and 1988.

Reynolds notes that ending the record in mid-1988 exaggerated the satellite errors because the record includes the hot El Niño of 1987 but misses much of the cool La Niña of 1988. Because of such natural fluctuations, he and other researchers caution against using a six-year-long record to talk about temperature trends. — R. Monastersky

Chiron's brightening hints it's a comet

When astronomer Charles Kowal in 1977 discovered the object now called Chiron between the orbits of Saturn and Uranus, it was known enigmatically as "Object Kowal." Astronomers could not tell whether it was an asteroid or a comet, since it orbited farther from the sun than most known asteroids but for years failed to show a comet's fuzzy "coma." Now Chiron may have revealed its true identity.



Solid line shows how a typical asteroid brightens as it nears the sun, compared with additional brightening of "Comet" Chiron. Horizontal axis represents distance from sun in astronomical units; vertical axis shows visual magnitude.

Astronomers had speculated that the object might never warm enough to release the frozen surface material that would give it a coma. But as early as November 1987, as it approached the sun, Chiron seemed to brighten more rapidly than would be expected of a bare, rocky object. Now Karen J. Meech of the University of Hawaii Institute for Astronomy in Honolulu and Michael J.S. Belton of Kitt Peak National Observatory in Tucson, Ariz., report a coma around Chiron in images made with the Kitt Peak 4-meter telescope when the object was about 11.8 astronomical units from the sun (1 astronomical unit equals about 92.9 million miles). Chiron is expected to get no closer than about 8.5 astronomical units, but the brightening is apparently due to "sunlight reflected from an extended dust atmosphere," they say, "indicating that it is a very large comet."

The researchers note that Chiron appears about 112 miles in diameter, 10 to 20 times the size of Comet Halley. Ices such as carbon dioxide, which evaporate at much lower temperatures, may have been freed in what could be Chiron's first trip this close to the sun. — J. Eberhart