US fears of Soviet satellite getting ahead

London

THE Soviet Earth-sensing satellite, Kosmos-1870, launched on 25 July, is causing some concern in the United States. Although the official Soviet announcements treated it as just one more satellite carrying out remote-sensing work in fields that include hydrology, cartography, geology, agriculture and the study of the environment, US space officials see it as a further indication that the Soviet Union is building up a considerable lead in space technology.

They see the K-1870 as an analogue of their own Earth Observing System, (EOS) — with the difference that K-1870 is now in orbit and EOS will not be ready for launch until the mid-1990s. Furthermore, at an estimated 20 tonnes, K-1870 is some 7–10 times heavier than either the most advanced US Earth resources satellites now operational (Landsats 4 and 5) or the largest civilian Earth resources satellite ever launched. Even the premature re-entry last week of the polar-orbit reconnaissance satellite Kosmos-1871 has failed to dent the image of Soviet prowess evoked by K-1870.

The official Soviet announcements followed the routine low-key pattern typical of Kosmos launches. They did, however, stress that the satellite was launched by a Proton launcher (the services of which are now available commercially to countries seeking a launch facility for their satellites) and especially stressed K-1870's radar facilities.

From the very beginning, the Soviet space programme has placed considerable emphasis on remote sensing "in the interests of the national economy", and although this catchphrase may in the early days have been intended in part to allay public disquiet about the cost of the programme, it has more than justified itself by results not only in weather forecasting but also in the location of mineral and water resources.

Remote sensing is playing an increasing part in 'international' missions conducted under the Interkosmos programme. The programme of the recent Soviet–Syrian mission included photographic and spectrometric surveys of Syria, aimed at geological and hydrological prospecting, the study of agroindustrial resources, and investigation of atmospheric and coastal pollution. Furthermore, the Soviet Union is now inaugurating a commercial space-based photographic survey service, offering a better resolution than any similar service that is available commercially in the West. **Vera Rich**

French company use Chinese satellite

Paris

THE use of a Chinese satellite to carry out French microgravity experiments last week was "completely independent of the temporary suspension of Europe's Ariane rocket launches", according to a spokesman from Matra, the company behind the experiments. It was the "friendly relationship" between Matra and the Chinese government that led to the offer of space on the Long March 2 rocket. Matra, which builds the vehicle-equipment bays for Ariane rockets, is to supply electronic equipment for the Jiuquan launch site in western China.

Two experiments were carried out, an accelerometry test of gravitational forces and a study, using algae, prepared by Matra in association with a bioengineering laboratory of the *Centre National de la Recherche Scientifique*. The collaboration was agreed at June's Paris Air Show, the satellite was launched on 5 August and the data were received in Paris 10 days later. Matra believes this is the first time a western industrial company has collaborated with the Chinese government on a space project and expects to repeat the exercise in the future. Peter Coles

Unauthorized release upsets EPA

Washington

IN a move that he characterized as "civil disobedience", a Montana State University researcher admitted last week that he had released a genetically engineered microbe into the environment without the approval of the US Environmental Protection Agency (EPA). Plant pathologist Gary Strobel said he inoculated 14 elm trees with a recombinant strain of *Pseudomonas syringae*, whose enhanced antifungal activity he had developed to combat Dutch Elm disease.

Strobel injected the trees with the recombinant bacteria on 13 June, two days before he applied for EPA approval for the field test. Strobel said he was not aware of the regulations that require the EPA to clear all releases of genetically engineered organisms into the environment until a colleague warned him. If he had waited for approval, he said, he would have been forced to delay the test until next season, and lose a year's work.

Strobel's action highlights the frustration of many researchers over the lengthy review for field tests, but he could now be denied government funding permanently or face criminal charges. Carol Ezzell

World's longest bridge network for Japan

Tokyo

THE world's longest network of bridges linking mainland Japan (Honshu) to the island of Shikoku was completed last week.

The Seto Ohashi (big bridge), which spans nearly 10 km by straddling five islands in the Seto Inland Sea, is a massive feat of engineering that has engaged more than 2,000 construction companies over the past nine years and has cost Y1.13 million million ($7,500 million). There are three suspension bridges, two cable-stayed, one truss and five viaduct bridges forming a 'double decker' — the bridges have a dual carriageway for cars and will have a railway underneath.

Honshu–Shikoku Bridge Authority

World's longest bridge and highest toll?

Two more multi-bridge systems linking Shikoku and Honshu are under construction. To the east of Seto Ohashi, a road/rail link between Kobe (on Honshu) and Naruto (Shikoku) is due to be completed in 1998 and will include the world's longest suspension bridge, with a central span of nearly 2 km, which, like Seto Ohashi, will be a double-decker. To the west, construction of a 9-bridge road link between Onomichi (Honshu) and Imabari (Shikoku) has been under way since 1975. Two bridges are complete, two are under construction, and, in line with Japan's policy of boosting domestic demand, construction of three more should begin next year.

Seto Ohashi will open to road and rail traffic in April next year, allowing the crossing to Shikoku to be made in 10–20 minutes instead of at least an hour by ferry. But the saving in time comes at a high cost. To repay the enormous sums borrowed for construction, the Honshu–Shikoku Bridge Authority is expected to set the toll at about Y5,000 ($33) one way. David Swinbanks