SLF director Claude Jaccard: a three-fold increase in deaths due to avalanches has to be seen in the context of a "fifty-to-hundred-fold" increase in tourism. On the right, avalanche barriers on the lower slopes of Weissfluhjoch, Davos.

ETH on the dielectric constant of ice. He returned to Switzerland after two years at Argonne National Laboratories in the United States and went directly to SLF for a six-year stint. He returned as director in 1980 following 13 years as professor of solid-state physics at the University of Neuchatel.

Understanding the mechanics of snow is difficult, says Jaccard, because its structure is disordered. Whereas describing the mechanical properties of a newtonian liquid requires just a single parameter, viscosity, describing the mechanics of snow, requires ten or fifteen. In one continuing project at EISLF, researchers take snow samples, make thin sections of them, fix and photograph them against a dark background and analyse the photos by computer. They are now experimenting with three-dimensional computer models to improve accuracy.

SLF has already contributed to new zoning laws and architectural norms. Communities heed its warnings and evacuate or alert their residents depending on the danger. Long-term efforts, for example by planting trees or erecting preventive structures (shown above), continue to reduce the danger of avalanches.

Such measures have their own ecological consequences. Trees must be planted all the way to the top of a ridge and must be planted densely enough to intercept snowfall efficiently.

The trees themselves are often the first victims of avalanches when this plan is not followed. Small trees may bend under the force of the snow but larger trees are mostly destroyed.

Beneath the man-made structures, avalanches occur less frequently, but the snow up above melts more slowly, shortening the vegetation period. Some plants below the barriers get a kind of frostbite when not covered with a blanket of snow.

Facilities at the institute include room-sized refrigerators used to study snow. Asked if the researchers save snowballs for use in the summer, Jaccard says, "No, we see enough snow in winter". S.D.

Science faces a struggle for popularity after Schweizerhalle

Concern about the side-effects of science is at an all-time high in Basle in the aftermath of the 1986 toxic chemical spill at the Sandoz facility at Schweizerhalle. Coming after the dioxin spill at Seveso, Italy (for which Hoffmann-La Roche was responsible) and Chernobyl, Schweizerhalle was "the last straw", says one researcher. For the first time, residents were confronted directly with an environmental catastrophe, in which most of the fish in the Rhine died.

In the most ominous development, windows were broken at the Biozentrum of the University of Basle, as if basic researchers were to blame for the spill. Opponents of animal research and genetic engineering have taken advantage of the ferment to push restrictions in those areas. Although no laws have been passed, some researchers fear that the next proposals will be "more reasonable and therefore more dangerous". And concern is growing about anti-science sentiment elsewhere in Switzerland as well.

Opinions on the matter vary. Peter Fricker, general secretary of the Swiss National Science Foundation (SNSF), says that most Swiss have a tolerant, even a "benevolent", attitude towards science, if they care about it at all. The National Research Programmes of SNSF serve as a "locomotive" to help create a positive public image of science.

Alfred Pletscher, president of the Swiss Academy of Medical Sciences and long-time science administrator, says that the worst of the backlash from Schweizerhalle has passed. Parliament has been supportive toward science for much of this decade, because "they realize that research is necessary to keep a country with few natural resources strong". Fricker sees the European Community "fusion" of 1992 as the kind of threat that could unify the population behind science.

There has been an effort, says Fricker, to publish more about science in daily newspapers to "make people see the good side of science". Eckart Gwinner of Hoffman-La Roche sees a need for more and better training of science journalists.

Basle biologist Eduard Kellenberger takes a more pessimistic view. He predicts that the debate over the merits of science will become "emotionalized and polarized" in Basle much as in West Germany. Opponents of genetic engineering, for instance, refuse even to meet university or corporate researchers. A parliamentary proposal to outlaw genetic engineering remains shrouded in secrecy.

Hoffmann-La Roche and Ciba-Geigy have increased their public relations efforts in the form of public meetings and open houses at factories and laboratories to try to keep open the lines of communication. Forums have been well-attended but the battle for hearts and minds has only just begun. Kellenberger, for one, thinks that it is already too late. "No matter what the companies do, the population doesn't believe a word." S.D.