In the routine sequence of AMS measurements the quality of the whole facility is first checked by calibrated samples (ANU, wood from 1860 AD, 23 PMI IAEA, graphite) which have been chemically treated in the same manner as the unknown samples. Then 2–3 unknown samples are measured before another calibrated sample is used. In this way accuracies of better than 1% have been established.

At the moment, the research program involves only 14C measurements, but after the installation of a new injection system consisting of a 90° electrostatic deflector followed by a new stronger 90° magnet applications with heavier elements will be pursued. Now the interest is mainly focused on the dating of sediment profiles from Bavaria. In addition, several archaeological samples and volcanic samples have been dated. A new project starting this year involves 14C measurements on chlorine hydrocarbons. The aim of this project is to deduce the origin of these compounds, e.g., natural or anthropogenic, from the measured 14C content.

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14C DATING OF SEDIMENT SAMPLES
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The research program at the Erlangen AMS facility (Kretschmer 1996) is mainly concentrated to the dating of sediment samples. Recently we investigated some peat profiles from South Bavaria as part of the program “Change of the Geo- and Biosphere During the Last 15,000 Years, Continental Sediments as Expression of Changing Environment.” The dating of several continuous peat profiles at different locations together with corresponding pollen analyses should help to establish a better chronology of climate and vegetation of Holocene in Bavaria.

First, bulk sediment samples were obtained from the core by AAA treatment, conversion to CO2 under vacuum and finally H2 induced graphitization with the use of iron as a catalyst. One problem with the radiocarbon dating of peat samples is the “hard water effect” since the plants on which the peat is based can assimilate CO2 both from the air and from the water. If old carbonates are dissolved in the water the dating of the bulk sediments may be obscured by this effect and the resulting ages become older. This problem can be solved if the dating is performed on the pollen, which are blown in from outside. Therefore we plan pollen dating to obtain more reliable results. For the extraction of the pollen we use a filter with a 100 µm nylon mesh; besides the pollen the filtrate contains also silicates, amorphous organic material and cellulose, which are removed by chemical treatment described in Faegri and Iversen (1989), and sieving through a 20-µm nylon mesh. The result of this procedure is checked under microscope and converted first into CO2 and then via graphitization into sputter targets. First pollen dating has been performed and the results are encouraging.

Another point of interest was the eruptive chronology of the Sakurajima volcano in southern Kyushu, which is one of the most active volcanoes in Japan. Tephra layers of large-scale eruptions of this volcano may serve as time markers in this region and have been investigated extensively (Machida and Arai 1996). Since the oldest tephra layer is subject to a controversy concerning its