system, monsoon was vigorous to active over northwest India. The heavy rains resulted in high floods in the central Indian rivers of Tapti and Narmada submerging the Surat town and its neighbourhood in the 3rd week of September.

During the monsoon of 1998 floods occurred in August, September months over north India in the States of Assam, Orissa, Bengal, Uttar Pradesh, Andhra Pradesh and Gujarat, and heavy rains also occurred in the Central Himalayan regions. Considering the past 11 year flood data (1987-1998), large number of floods (i.e. 429) were recorded at 70 gauge/discharge sites during this season, out of which 136 were major floods (i.e. 1 m and above the danger level). Using the flood statistics of 1998 monsoon, which were recorded at different gauge/discharge (G/D) sites of major rivers of the country, Fig. 1 was drawn showing floods experienced at different G/D sites on major rivers of the country.

Due to continuous heavy rains extending over a week or so, land slides occurred in Garhwal-Kumaon regions of central Himalaya. Nearly 200 pilgrims, trekking along the Kali river to Kailash and Mansarovar pilgrimage centres in southern Tibet, were completely washed away into the Kali river along with their mules, horses and other camping equipment on 18th August at Malpa camping site in the Pittoragarh district of Kumaon region.

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SUMMER AND WINTER SCHOOLS IN MODERN PETROLOGY

The summer/winter schools on "Databases, Numerical Methods and Computer Modelling in Modern Approaches to Petrology" (NMCMP-I to V) have recently completed the first five year cycle successfully. The NMCMP-I course commenced in 1993 and concluded in 1999 at the Department of Geology, Delhi University (Course Director: Prof. P.K. Verma). The courses were earlier conducted at Jadavpur University (S.C. Sarkar, 1994), Allahabad University (A.K. Gupta, 1995) and Wadia Institute of Himalayan Geology (K.K. Sharma, 1996). These schools were the first of their kind aiming at familiarising the budding earth scientists with current global trends in petrological research. The schools gave a major thrust on utilizing computer programmes for a critical synthesis of large volume of data, leading to reconstruction and quantification of viable petrological processes. This programme was sponsored by Science and Engineering Research Council (SERC) of the Department of Science and Technology (DST). Meticulous planning by Prof. R.S. Sharma, Chairman of NMCMP; Dr. K.R. Gupta, DST and Prof. P.K. Verma of Delhi University made it a grand success, generating great enthusiasm among the young scientists from all over India to provide major reorientation to their research activity. The faculty for the courses consisted of eminent scientists like A.B. Thompson, R.S. Sharma, R.N. Singh, K. Gopalan, C. Leelanandam, S.C. Sarkar and A. De.

The thrust in NMCMP-I was on fundamentals of thermodynamics in understanding natural processes like metamorphism, magmatism and ore genetic processes through statistical approaches,

computer documentation and information system. The NMCMP-II was primarily aimed at evaluation of metamorphic belts with emphasis on numerical characterization of metamorphic process. The thrust on NMCMP-III was on experimental petrology. NMCMP-IV focussed on fundamentals of geochemical, geochronological and fluid inclusion studies, along with critical assessment of databases in terms of source rock characterization, magma types, magma evolution, role of fluids and finger prints of metamorphism and deformation related processes. Finally in NMCMP-V, introduction to work in windows environment, internet surfing for assessing databases and literature and computer programmes for different applications were given more weightage, keeping in view the changing scenario in computer application and its advancement. The emphasis, throughout the course, was on relational databases. Presentation of research work by individual participants was the manifestation of their involvement throughout the course, which culminated in the creation of some fundamental databases which can be used by other researchers. Every participant was presented with one copy each of 'Database Systems' by C.J. Date and 'The Complete Idiot's Guide to the Internet' by Peter Kent.

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REMOTE SENSING TECHNOLOGY APPLICATIONS WORKSHOP

The workshop was organised by the Geology Section, Department of Civil Engineering, Karnataka Regional Engineering College, Surathkal, Mangalore on 8th April 1999. This workshop was sponsored by Indian Space Research Organisation (ISRO), Department of Space, Bangalore.

S. Adiga, Director, NNRMS-RRSSC, ISRO, Bangalore, delivered keynote address on "Remote Sensing Technology and its Applications: The present and Immediate Future". G.K. Shivakumar and D. Venkat Reddy spoke on the remote sensing concepts and future trends. M.V. Bhat described thematic maps and their production and utilisation. He also elaborated on GIS and digital mapping. Manavalan gave and overview of remote sensing applications in water resources with case studies. Lakshman Nandagiri also spoke on water resources evaluation using remote sensing techniques.

H. Gangadhar Bhat, spoke on coastal process along Dakshina Kannada, incorporating suspended sediment analysis, littoral currents, shoreline changes, synoptic and repetitive coverage of the satellite images used in morphological changes in the estuaries of Netravati and Mulki-Pavanje. G.S. Dwarkish described the use of satellite data for coastal developmental activities. D. Venkat Reddy spoke on education and training opportunities on remote sensing technology in India. The workshop concluded with an appreciation of remote sensing as an essential tool in geology.

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