TABLE 2. CHEMICAL COMPOSITION OF SUSPENDED LOAD AND BEDLOAD OF THE GANGA AND BRAHMAPUTRA

| Sample # | | BGP 18 | BGP 14 | BGP 82 | BGP0 | BGP 7 | BGP 5 | BGP 6 | BGP 68 | BGP 3 | BGP 21 | BGP 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| River | | BRAHMAPUTRA | | | | GANGA | | | | LOWER MEGHNA | | |
| Type | | SL | BL | BL | BL | SL | BL | BL | BL | SL | SL | SL |
| Date | | 05/08/96 | 05/08/96 | 07/03/97 | 11/01/96 | 02/08/96 | 02/08/96 | 02/08/98 | 03/03/97 | 31/07/98 | 10/08/98 | 10/08/98 |
| $SiO_2$ | (%) | 60.7 | 73 | 76.5 | 78.6 | 54.7 | 66 | 78.4 | 81 | 58.2 | 52.8 | 55.8 |
| $Al_2O_3$ | (%) | 16.9 | 11.9 | 10.3 | 10.5 | 17.2 | 11.9 | 7.86 | 7.65 | 18.4 | 18.1 | 19.7 |
| $Fe_2O_3$ | (%) | 6.81 | 4.19 | 3.88 | 2.37 | 6.96 | 4.71 | 2.46 | 1.69 | 7.58 | 7.67 | 8.13 |
| MnO | (%) | 0.10 | 0.05 | 0.09 | 0.02 | 0.09 | 0.05 | 0.05 | 0.03 | 0.11 | 0.09 | 0.09 |
| MgO | (%) | 2.87 | 1.72 | 1.23 | 0.89 | 2.67 | 2.12 | 0.91 | 0.84 | 3.22 | 2.82 | 3.00 |
| CaO | (%) | 2.00 | 1.99 | 2.36 | 1.63 | 3.76 | 4.37 | 3.28 | 2.52 | 1.77 | 2.56 | 1.36 |
| $Na_2O$ | (%) | 1.53 | 1.82 | 2.02 | 2.08 | 0.86 | 1.33 | 1.48 | 1.51 | 1.39 | 0.94 | 0.97 |
| $K_2O$ | (%) | 3.25 | 2.50 | 1.99 | 2.34 | 3.32 | 2.64 | 1.83 | 1.81 | 3.57 | 3.18 | 3.56 |
| $TiO_2$ | (%) | 0.79 | 0.53 | 0.57 | 0.27 | 0.78 | 0.65 | 0.57 | 0.26 | 0.83 | 0.81 | 0.81 |
| $P_2O_5$ | (%) | 0.17 | 0.10 | 0.10 | 0.04 | 0.14 | 0.13 | 0.12 | 0.07 | 0.16 | 0.15 | 0.15 |
| LOI | (%) | 4.76 | 2.00 | 0.83 | 1.16 | 9.32 | 5.80 | 2.57 | 2.49 | 4.76 | 10.6 | 6.43 |
| Carbonate | (%) | 1.22 | 0.55 | 0.01 | 0.01 | 6.07 | 7.11 | 4.54 | 3.73 | nd | 2.85 | N.D. |
| Rb | (ppm) | 187 | 126 | 74.2 | N.D. | 219 | 182 | 103 | 94.8 | 214 | 205 | N.D. |
| Sr | (ppm) | 89.4 | 148 | 183 | N.D. | 70.3 | 85.3 | 91.9 | 79 | 113 | 135 | N.D. |
| $^{87}Sr/^{86}Sr$ | | 0.74884 | 0.73457 | 0.72102 | N.D. | 0.78151 | 0.76959 | 0.76913 | 0.77441 | 0.75305 | 0.73790 | N.D. |
| Sm | (ppm) | 6.51 | 7.26 | 8.69 | N.D. | 7.36 | 6.47 | 9.77 | 3.37 | 6.25 | 6.49 | N.D. |
| Nd | (ppm) | 34.3 | 39 | 50.9 | N.D. | 39.1 | 34.2 | 52.3 | 17.7 | 32.9 | 33.9 | N.D. |
| $\varepsilon_{Nd}(0)$ * | | -16.3 | -16.9 | -13.6 | N.D. | -17.2 | -17.7 | -17.7 | -17.7 | -17.4 | -14.8 | N.D. |

* : ‡ : $^{143}Nd/^{144}Nd$ expressed as $\varepsilon_{Nd}$. BL : bedload sediments; SL : suspended load. Major element analyses (wt %) were made by inductively coupled plasma optical emission spectroscopy on samples fused with lithium metaborate. The proportions of carbonate were manometricaly determined as $CO_2$ released by reaction with >100% $H_3PO_4$ (ref. Galy et al., 1999). Sr and Nd isotopic compositions have been determined on the whole silicate fraction of the sediment after classical acid digestion and liquid chromatographic separation and were measured on a Finnigan-MAT 262 in static mode (Galy et al., 1996 and reference therein). Sr isotopic ratios were normalised to $^{86}Sr/^{88}Sr = 0.1194$, $^{87}Sr/^{86}Sr$ of NBS 987 standard = 0.710195 ± 16. Nd isotopic ratios were normalised to $^{146}Nd/^{144}Nd = 0.7219$, $^{143}Nd/^{144}Nd$ of La Jolla standard = 0.511854 ± 16.

TABLE 3. CHEMICAL COMPOSITION OF THE MAIN HIMALAYAN FORMATION

| Himalayan Formation | | THB | HHC (F I) | LH | Siwaliks |
|---|---|---|---|---|---|
| Nb | | 120 | 98 | 120 | 35 |
| $SiO_2$ | (%) | 64.0 ± 1.12 | 71.9 ± 1.34 | 66.8 ± 2.65 | 65.1 ± 5.26 |
| $Al_2O_3$ | (%) | 15.8 ± 0.26 | 13.1 ± 0.60 | 14.4 ± 1.13 | 6.94 ± 1.26 |
| $Fe_2O_3$ | (%) | 4.95 ± 0.41 | 4.36 ± 0.39 | 6.29 ± 0.73 | 2.91 ± 0.51 |
| MnO | (%) | 0.10 ± 0.03 | 0.07 ± 0.01 | 0.07 ± 0.01 | 0.06 ± 0.02 |
| MgO | (%) | 1.98 ± 1.22 | 1.76 ± 0.24 | 3.02 ± 0.68 | 1.21 ± 0.23 |
| CaO | (%) | 4.19 ± 2.07 | 1.07 ± 0.16 | 0.68 ± 0.60 | 10.2 ± 2.95 |
| $Na_2O$ | (%) | 3.68 ± 0.28 | 2.26 ± 0.18 | 0.86 ± 0.19 | 0.42 ± 0.11 |
| $K_2O$ | (%) | 3.46 ± 1.11 | 3.03 ± 0.22 | 3.28 ± 0.35 | 1.83 ± 0.32 |
| $TiO_2$ | (%) | 0.60 ± 0.24 | 0.62 ± 0.06 | 0.74 ± 0.10 | 0.38 ± 0.06 |
| $P_2O_5$ | (%) | 0.25 ± 0.20 | 0.14 ± 0.03 | N.D. | 0.09 ± 0.01 |
| LOI | (%) | 0.68 ± 0.16 | 1.26 ± 0.21 | 3.48 ± 0.88 | 10.6 ± 2.23 |
| Carbonate | (%) | N.D. | N.D. | N.D. | 18.4 ± 5.37 |
| Rb | (ppm) | 129 ± 25 | 191 ± 24 | 215 ± 33 | 86 ± 61 |
| Sr | (ppm) | 390 ± 60 | 134 ± 16 | 115 ± 33 | 55 ± 51 |
| $^{87}Sr/^{86}Sr$ | | 0.706 ± 0.001 | 0.753 ± 0.008 | 0.867 ± 0.072 | 0.738 ± 0.018 |
| Sm | (ppm) | 5.1 ± 5.1 | 5.9 ± 0.9 | 7.2 ± 1.0 | 3.9 ± 1.6 |
| Nd | (ppm) | 27.4 ± 23 | 30.3 ± 4.7 | 39.2 ± 4.7 | 20 ± 8.7 |
| $\varepsilon_{Nd}$ (0) | | -4 ± 5.4 | -15.1 ± 0.8 | -24.9 ± 0.8 | -17.2 ± 1.2 |

Variation of the chemical composition of Himalayan formation has been estimated by $2\times\sigma/\sqrt{n-1}$.