**Supplementary material 3 Sediment accumulation rates (SARs) for logged intervals**

Table 6.

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| **SARs in the Gerbe section calculated from tuning the records to eccentricity.** |
| Height interval (m) | Age interval (Ma) | SAR (cm/kyr) |
| 0 – 7.6 | 47.365 – 47.338 | 28.6 cm/kyr |
| 7.6 – 37.4 | 47.338 – 47.236 | 29.2 cm/kyr |
| 37.4 – 58.3 | 47.236 – 47.189 | 44.4 cm/kyr |
| 58.3 – 102.5 | 47.189 – 47.082 | 41.3 cm/kyr |
| 102.5 – 179.5 | 47.082 – 46.96 | 63.1 cm/kyr |
| 179.5 – 200.6 | 46.96 – 46.9266 | 63.2 cm/kyr |
| SARs calculated at different time intervals throughout the Gerbe section length. Averaged SAR is 47 cm/kyr. |

Table 7.

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| **SARs in the Labuerda section 2 calculated from tuning the records.** |
| Height interval (m) | Age interval (Ma) | SAR (cm/kyr) |
| 0 – 35 | 46.1964 – 46.098 | 34.5 |
| 35 – 72 | 46.098 – 45.994 | 34.5 |
| 72 – 110.5 | 45.994 – 45.891 | 37.5 |
| 110.5 – 166 | 45.891 – 45.789 | 54.4 |
| 166 – 209.4 | 45.789 – 45.618 | 24.4 |
| 209.4 – 243.8 | 45,618 – 45.512 | 32.4 |
| 243.8 – 277.4 | 45.512 – 45.409 | 32.5 |
| 277.4 – 314.8 | 45.409 – 45.323 | 44.6 |
| 314.8 – 357 | 45.323 – 45.17 | 26.9 |
| 357 – 367 | 45.17 – 45.1336 | 26.7 |
| = SARs calculated at different time intervals throughout the Labuerda section 2. The averaged SAR is 35 cm/kyr. |
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Table 8.

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| **SARs in the Boltaña section calculated from tuning the records.** |
| Height interval (m) | Age interval (Ma) | SAR (cm/kyr) |
| 0 – 19 | 45.2964 – 45.226 | 27 cm/kyr |
| 47.4 – 19 | 45.226 – 45.12 | 26.8 cm/kyr |
| 79.4 – 47.4 | 45.12 – 45.015 | 30.5 cm/kyr |
| 104.8 – 79.4 | 45.015 – 44.9 | 24.28 cm/kyr |
| 130.2 – 104.8 | 44.9 – 44.795 | 24.2 cm/kyr |
| 157.8 – 130.2 | 44.795 – 44.619 | 14.7 cm/kyr |
| 167 – 157.8 | 44.619 – 44.56 | 14.6 cm/kyr |
| SARs calculated at different time intervals throughout the Boltaña section. SAR change from 14–30 cm/kyr and have averaged values of 24 cm/kyr. |

Table 9.

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| **Table 5.35 SAR in the Forcaz section calculated from tuning the records.** |
| Height interval (m) | Age interval (Ma) | SAR (cm/kyr) |
| 0 – 9.2 | 44.6372 – 44.619  | 50.5 cm/kyr |
| 9.2 – 26.6 | 44.619 – 44.585 | 51.1 cm/kyr |
| 26.6 – 50.4 | 44.585 – 44.488 | 24.5 cm/kyr |
| 50.4 – 67.4 | 44.488 – 44.384 | 16.3 cm/kyr |
| 67.4 – 114.8 | 44.384 – 44.28 | 44.6 cm/kyr |
| 114.8 – 143.6 | 44.28 – 44.181 | 29.1 cm/kyr |
| 143.6 – 161 | 44.181 – 44.099 | 21.2 cm/kyr |
| 161 – 174.8 | 44.099 – 44.053 | 32.1 cm/kyr |
| 174.8 – 185 | 44.053 – 44.0236 | 34.8 cm/kyr |
| SARs calculated at different time intervals throughout the Forcaz section length. Average sedimentation rate is 29.4 cm/kyr. This SAR is very similar to the one calculated in the A6 core sediments at 28.5 cm/kyr. |

Table 10.

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| **Table 5.35 SAR in the Morillo Reservoir section calculated from tuning the records.** |
| Height interval (m) | Age interval (Ma) | SAR (cm/kyr) |
| 0 – 4.8 | 44.642 – 43.635  | 14.5 cm/kyr |
| 4.8 – 18.4 | 44.635 – 43.614 | 15.4 cm/kyr |
| 18.4 – 30.2 | 43.614 – 43.594 | 17 cm/kyr |
| 30.2 – 43.2 | 43.594 – 43.572 | 17 cm/kyr |
| 43.2 – 57 | 43.572 – 43.541 | 22.5 cm/kyr |
| 57 – 68.8 | 43.541 – 43.523 | 15.2 cm/kyr |
| 68.8 – 80.8 | 43.523 – 43.502 | 17.5 cm/kyr |
| 80.8 – 93.2 | 43.502 – 43.481 | 17 cm/kyr |
| 93.2 – 103 | 43.481 – 43.459 | 22.4 cm/kyr |
| 103 – 115.4 | 43.459 – 43.434 | 20.1 cm/kyr |
| 115.4 – 123 | 43.434 – 43.418 | 21 cm/kyr |
| SARs calculated at different time intervals throughout the Morillo reservoir section length. Average sedimentation rate is 19 cm/kyr. |