Supplementary material

**Table S1**. TC, TN, Corg, Corg/TN ratio and stable C and N isotope composition in the studied sediment core. Data related to geochronology and bulk sediment properties (content of mud and sand) including in this table were taken from Alonso-Hernandez et al. [18].

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Depth**  **(cm)** | **Mass depth**  **(g cm-2)** | **Data**  **(y)** | **TC**  **(%)** | **Corg**  **(%)** | **TN**  **(%)** | **δ13Corg**  **(‰)** | **δ15N**  **(‰)** | **Corg/TN** | **Sand**  **(%)** | **Mud**  **(%)** |
| 1.0 | 0.32 | 2003 | 6.2 | 1.67 | 0.23 | -19.30 | 0.26 | 8.5 | 16.9 | 83.0 |
| 4.3 | 1.31 | 1997 | 5.6 | 1.75 | 0.21 | -19.61 | 0.05 | 9.7 | 19.8 | 80.2 |
| 5.8 | 1.90 | 1994 | 6.1 | 1.80 | 0.23 | -19.72 | 0.80 | 9.1 | 17.1 | 82.8 |
| 7.3 | 2.56 | 1990 | 5.8 | 1.63 | 0.20 | -20.12 | 1.26 | 9.5 | 16.0 | 83.9 |
| 8.8 | 3.30 | 1986 | 5.8 | 1.64 | 0.21 | -20.07 | 1.39 | 9.3 | 20.7 | 79.3 |
| 10.3 | 4.04 | 1982 | 5.7 | 1.49 | 0.21 | -20.26 | 1.53 | 8.3 | 24.3 | 75.6 |
| 11.8 | 4.73 | 1978 | 5.6 | 1.37 | 0.16 | -20.56 | 1.40 | 10.0 | 15.6 | 84.3 |
| 13.3 | 5.50 | 1973 | 5.3 | 1.26 | 0.15 | -20.97 | 1.85 | 9.8 | 22.1 | 77.8 |
| 14.8 | 6.41 | 1968 | 5.5 | 1.33 | 0.19 | -20.83 | 2.23 | 8.2 | 16.9 | 83.0 |
| 16.3 | 7.28 | 1963 | 5.7 | 1.32 | 0.19 | -21.16 | 2.20 | 8.1 | 13.9 | 86.0 |
| 17.8 | 8.11 | 1958 | 5.5 | 1.34 | 0.17 | -20.51 | 2.12 | 9.2 | 12.6 | 87.3 |
| 19.3 | 8.95 | 1953 | 5.5 | 1.35 | 0.16 | -20.57 | 2.26 | 9.8 | 14.8 | 85.2 |
| 20.8 | 9.84 | 1948 | 5.6 | 1.37 | 0.20 | -21.01 | 2.22 | 8.0 | 16.5 | 83.4 |
| 22.3 | 10.82 | 1942 | 5.3 | 1.36 | 0.18 | -20.71 | 2.13 | 8.8 | 15.4 | 84.5 |
| 23.8 | 11.73 | 1937 | 5.4 | 1.43 | 0.18 | -20.76 | 1.47 | 9.3 | 19.0 | 80.9 |
| 25.3 | 12.71 | 1932 | 5.2 | 1.33 | 0.18 | -20.74 | 1.98 | 8.6 | 16.4 | 83.5 |
| 26.8 | 13.85 | 1925 | 5.6 | 1.27 | 0.16 | -21.63 | 1.98 | 9.3 | 15.6 | 84.3 |
| 28.3 | 14.86 | 1919 | 5.21 | 1.36 | 0.16 | -20.95 | 2.14 | 9.9 | 14.98 | 85.0 |
| 29.8 | 15.77 | 1914 | 5.16 | 1.36 | 0.15 | -20.99 | 1.98 | 10.4 | 15.56 | 84.4 |
| 31.3 | 16.83 | 1908 | 5.19 | 1.36 | 0.15 | -20.88 | 1.84 | 10.3 | 17.41 | 82.5 |

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**Figure S1**. Corg and TN reported for coastal areas of Cuba and the Caribbean. Haina Estuary, Amatique bay, Puerto Cortes, Port-au-Prince bay, Cartagena bay and Cariaco Gulf reported by Sanchez Cabeza and Ruiz-Fernandez (unpublish), Coatzacoalcos Estuary reported by Ruiz-Fernandez et al. [1], Gulf of Batabano reported by Alonso-Hernandez et al. [2,3], Guacanayabo Gulf, Cayo Coco Laggon reported by Bouton et al. [4], Guanaroca Lagoon reported by Alonso-Hernandez et al. [5], Cienfuegos Bay reported by Garcia-Moya [6], Coloma Estuary reported by Alonso-Hernandez et al. [7], Havana bay reported by Diaz-Asencio et al. [8]

Pearson Correlations



|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | |
|  |  | TN | Corg | δ15N | δ13Corg | Corg/N | Mun | Sand |
| NT" | Pearson Corr. | 1 | 0.81529\* | -0.65645\* | 0.74393\* | -0.59439\* | -0.29055 | 0.29055 |
| p-value | -- | 1.18975E-5 | 0.00167 | 1.69668E-4 | 0.00571 | 0.21396 | 0.21396 |
| "Corg" | Pearson Corr. | 0.81529\* | 1 | -0.86852\* | 0.8883\* | -0.0227 | -0.30531 | 0.30531 |
| p-value | 1.18975E-5 | -- | 6.85236E-7 | 1.70233E-7 | 0.92431 | 0.19054 | 0.19054 |
| "δ15N" | Pearson Corr. | -0.65645\* | -0.86852\* | 1 | -0.90752\* | -0.08012 | 0.34885 | -0.34885 |
| p-value | 0.00167 | 6.85236E-7 | -- | 3.34675E-8 | 0.73704 | 0.13169 | 0.13169 |
| "δ13C" | Pearson Corr. | 0.74393\* | 0.8883\* | -0.90752\* | 1 | -0.0516 | -0.2629 | 0.2629 |
| p-value | 1.69668E-4 | 1.70233E-7 | 3.34675E-8 | -- | 0.82897 | 0.26278 | 0.26278 |
| "C/N" | Pearson Corr. | -0.59439\* | -0.0227 | -0.08012 | -0.0516 | 1 | 0.06255 | -0.06255 |
| p-value | 0.00571 | 0.92431 | 0.73704 | 0.82897 | -- | 0.79335 | 0.79335 |
| "Mun" | Pearson Corr. | -0.29055 | -0.30531 | 0.34885 | -0.2629 | 0.06255 | 1 | -1 |
| p-value | 0.21396 | 0.19054 | 0.13169 | 0.26278 | 0.79335 | -- | -- |
| "Sand" | Pearson Corr. | 0.29055 | 0.30531 | -0.34885 | 0.2629 | -0.06255 | -1 | 1 |
| p-value | 0.21396 | 0.19054 | 0.13169 | 0.26278 | 0.79335 | -- | -- |
| **2-tailed test of significance is used \*: Correlation is significant at the 0.05 level** | | | | | | | | |

**Figure S2**. Results of the correlation Pearson analysis between NT (%), Corg (%), δ15N (‰), δ13Corg (‰), C/N, Mund (%) and Sand (%) in the sediment core A19 collected in Sagua Estuary River.

**References (Supplementary Material)**

[1] Díaz-Asencio M, Alvarado JAC, Alonso-Hernández C, et al. Reconstruction of metal pollution and recent sedimentation processes in Havana Bay (Cuba): A tool for coastal ecosystem management. J Hazard Mater. 2011;196:402–411.

[2] Armenteros M, Díaz-Asencio M, Fernández-Garcés R, et al. One-century decline of mollusk diversity as consequence of accumulative anthropogenic disturbance in a tropical estuary (Cuban Archipelago). Mar Pollut Bull. 2016;113.

[3] Alonso-Hernández CM, Conte F, Misic C, et al. An overview of the Gulf of Batabanó (Cuba): Environmental features as revealed by surface sediment characterisation. Cont Shelf Res. 2011;

[4] Bouton A, Vennin E, Thomazo C, et al. Microbial origin of the organic matter preserved in the cayo coco lagoonal network, Cuba. Minerals. 2020;10:1–34.

[5] Alonso-Hernández CM, Garcia-Moya A, Tolosa I, et al. Tracing organic matter sources in a tropical lagoon of the Caribbean Sea. Cont Shelf Res. 2017;148.

[6] Garcia-Moya A. Origen y distribución espacial de la materia orgánica en los sedimentos superficiales de la bahía de Cienfuegos [Internet]. Carlos Rafael Rodriguez University.; 2018. Available from: https://www.researchgate.net/profile/Alejandro\_Garcia\_Moya2/publications.

[7] Alonso-Hernández CM, Tolosa I, Mesa-Albernas M, et al. Historical trends of organochlorine pesticides in a sediment core from the Gulf of Batabanó, Cuba. Chemosphere. 2015;137:95–100.

[8] Díaz-Asencio M, Alvarado JAC, Alonso-Hernández C, et al. Reconstruction of metal pollution and recent sedimentation processes in Havana Bay (Cuba): A tool for coastal ecosystem management. J Hazard Mater. 2011;196:402–411.