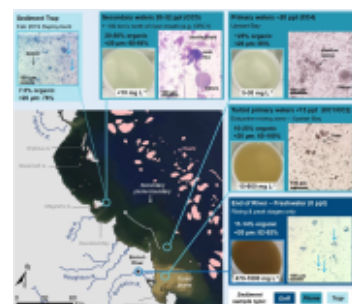


Particle size distribution data and major and trace element geochemistry data from end of river sites and flood plumes for the Burdekin and Tully Rivers as well as additional sites in the Johnstone, Ross and Haughton Rivers (NESP project 5.8, JCU)



[Metadata](#) | [Metadata \(XML\)](#)

Title	Particle size distribution data and major and trace element geochemistry data from end of river sites and flood plumes for the Burdekin and Tully Rivers as well as additional sites in the Johnstone, Ross and Haughton Rivers (NESP project 5.8, JCU)
Date	2021-02-22
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Abstract

The dataset contains the particle size distribution analysis (on a Malvern Mastersizer 3000 laser diffraction) and major and trace element geochemistry data for end of river and flood plume samples from the 2017, 2018 and 2019 Burdekin flood events as well as for the 2017 and 2018 Tully flood events. Additional data are provided from the Ross River, Haughton River and Johnstone River.

* This dataset is currently under embargo.

The grain size data were analysed following treatment with H₂O₂ which is designed to remove the organic material from the samples. Hence the data should be considered as a 'treated grain size' according to the protocols recommended in the Bainbridge et al. (in review) manuscript. The dataset represents the first time end of river and plume samples have been treated to examine the primary grain size. In addition, these are the first samples analysed from the > 25 PSU zone in the plume and samples > 10 PSU for grain size and geochemistry were also rare.

Bainbridge, Z. Lewis, S. Stevens, T. Petus, C. Lazarus, E. Gorman, J. Smithers, S. in review. Measuring sediment grain size across the catchment to reef continuum: Improved methods and environmental insights. Marine Pollution Bulletin.

Methods:

Our dataset includes end-of-river (EoR) suspended sediment samples from the Burdekin and Tully Rivers captured during high flow events that occurred over the 2016-2017 and 2017-2018 water years, and also the 2018-2019 water year for the Burdekin. Opportunistic, representative samples were also collected from the neighbouring South Johnstone River (Wet Tropics) in 2018, and the Herbert (Wet Tropics), Ross and Haughton (Dry Tropics) Rivers in 2019. In total 15 samples were analysed for the Burdekin, three for the Tully, two for the Ross and one each for the neighbouring South Johnstone, Herbert and Haughton Rivers. The Herbert River sample was a composite of daily sampling across the discharge peak from 4th to 7th February, 2019. Samples were collected off bridges with a 10 L container.

Flood plume sampling along the estuarine salinity gradient from the river mouth was conducted immediately following EoR sample collection. Given the larger size and duration of the Burdekin flood plume, sample sites targeted the movement of the plume over a number of days guided by near real-time MODIS satellite imagery. Sites were located along a salinity gradient transect extending from the freshwater reaches of the estuary and sites were selected to coincide with the environmental instrument arrays installed at Orchard Rocks,

Havannah Island and Dunk Island. Flood plume samples were collected using the SediPump® high-volume filtration system to ensure adequate samples sizes to complete the analyses. Pump durations at each site were 2-3 hours, which includes the time to collect the depth samples (1-2m above local benthic depth).

For further details on the grain size analysis see:

Bainbridge, Z. Lewis, S. Stevens, T. Petus, C. Lazarus, E. Gorman, J. Smithers, S. in review. Measuring sediment grain size across the catchment to reef continuum: Improved methods and environmental insights. Marine Pollution Bulletin.

Limitations of the data:

The sample pre-treatment of the grain size data need to be understood where H2O2 was used to remove the organics from the sample.

Format:

The data are provided as a Microsoft Excel file.

References:

Lewis, S., Bainbridge, Z. Stevens, T., Garzon-Garcia, A., Chen, C., Bahadori, M., Burton, J., James, C., Smithers, S. and Olley, J. (2020) What's really damaging the Reef?: Tracing the origin and fate of the environmentally detrimental sediment and associated bioavailable nutrients. Report to the National Environmental Science Program. Reef and Rainforest Research Centre Limited, Cairns (250pp.).

Bainbridge, Z. Lewis, S. Stevens, T. Petus, C. Lazarus, E. Gorman, J. Smithers, S. in review. Measuring sediment grain size across the catchment to reef continuum: Improved methods and environmental insights. Marine Pollution Bulletin.

Data Location:

This dataset is filed in the eAtlas enduring data repository at: data\custodian\2019-2022-NESP-TWQ-5\5.8_Origin-detrimental-sediment

Metadata language	eng
Character set	UTF8
Hierarchy level	Dataset

OnLine resource

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Protocol	WWW:LINK-1.0-http--related

Point of contact

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Role	Point of contact
Topic category	Biota

Extent

Description	Great Barrier Reef, Australia
File identifier	e1bd187e-40b6-4bb0-9706-6b7137121096
Metadata language	eng
Character set	UTF8
Metadata author	
Individual name	eAtlas Data Manager
Organisation name	Australian Institute of Marine Science (AIMS)
Role	metadataContact
Date stamp	2021-03-10T00:19:24