Data dictionary: SedNetNZ mean annual suspended sediment yields and net suspended sediment loads modelled using SedNetNZ in the Wairoa catchment

Simon Vale and Hugh Smith

Manaaki Whenua – Landcare Research

Contact: Simon Vale – vales@landcareresearch.co.nz

This data dictionary accompanies data provided for mean annual suspended sediment yields (t km^{-2} yr^{-1}) and net suspended sediment loads (t yr^{-1}) modelled using SedNetNZ for all RECv2.4 segments for the baseline and best-efforts mitigation scenarios in the Wairoa catchment. Sediment loads are modelled under contemporary climate and future climate change projections using 6 regional climate change models (RCMs) reported as min, med, and max across 4 representative concentration pathways (RCPs), RCP2.6, RCP4.5, RCP6.0 and RCP8.5.

The scenarios and methods used are described in the following reports:

- Smith H., Vale, S., Neverman, A., Robson-Williams, M., Harris, L. 2022. *Climate change impacts on suspended sediment loads in the Wairoa catchment, Hawke's Bay*. Manaaki Whenua – Landcare Research Contract Report LC4121 for Our Land & Water National Science Challenge.

- Vale S., Smith H., Robson-Williams, M., Harris, L. 2023. *Effects of climate change and erosion mitigation on suspended sediment loads and visual clarity in the Wairoa catchment, Hawke's Bay*. Manaaki Whenua – Landcare Research Contract Report LC4274 for Our Land & Water National Science Challenge.

The modelled sediment yields represent the sum of erosion process loads per unit of RECv2.4 watershed area, while the net suspended sediment loads represent the downstream accumulated load less any deposition on floodplains or within lakes. Some caution is needed when interpreting modelled sediment yields. Very high yields (t km^{-2} yr^{-1}) occur in a small number of watersheds despite having low loads (t yr^{-1}) due to their very small REC watershed areas.

The data is supplied as vector data (ESRI Shapefiles) and the attribute fields are named and described below.

Sediment yield

- wairoa_sedyield_baseline.shp
    - sediment yield for baseline under contemporary and projected future climate change
- wairoa_sedyield_mitigation.shp
    - sediment yield for best-efforts mitigation under contemporary and projected future climate change

Table 1 Shapefile attribute field names for sediment yield (t km^{-2} yr^{-1}) under contemporary and projected future climate change at mid (2040) and late (2090) century for baseline and best-efforts mitigation scenario.

Field	Description
nzsegment	Stream segment ID from RECv2.4
subcatchment	Major sub-catchment
catchment	Wairoa catchment
sedyield	SedNetNZ modelled annual sediment yield (t km^{-2} yr^{-1}).
mid26_min **mid26_med** **mid26_max**	Minimum, median, and maximum sediment yield under future climate change using RCP2.6 at mid-century (t km^{-2} yr^{-1}).
mid45_min **mid45_med** **mid45_max**	Minimum, median, and maximum sediment yield under future climate change using RCP4.5 at mid-century (t km^{-2} yr^{-1}).
mid60_min **mid60_med** **mid60_max**	Minimum, median, and maximum sediment yield under future climate change using RCP6.0 at mid-century (t km^{-2} yr^{-1}).
mid85_min **mid85_med** **mid85_max**	Minimum, median, and maximum sediment yield under future climate change using RCP8.5 at mid-century (t km^{-2} yr^{-1}).
lat26_min **lat26_med** **lat26_max**	Minimum, median, and maximum sediment yield under future climate change using RCP2.6 at late century (t km^{-2} yr^{-1}).
lat45_min **lat45_med** **lat45_max**	Minimum, median, and maximum sediment yield under future climate change using RCP4.5 at late century (t km^{-2} yr^{-1}).
lat60_min **lat60_med** **lat60_max**	Minimum, median, and maximum sediment yield under future climate change using RCP6.0 at late century (t km^{-2} yr^{-1}).
lat85_min **lat85_med** **lat85_max**	Minimum, median, and maximum sediment yield under future climate change using RCP8.5 at late century (t km^{-2} yr^{-1}).

Net sediment load

- wairoa_netload_baseline.shp
    - net suspended sediment load for baseline under contemporary and projected future climate change
- wairoa_netload_mitigation.shp
    - net suspended sediment load for best-efforts mitigation under contemporary and projected future climate change

Table 2 Shapefile attribute field names for net suspended sediment load (t yr^{-1}) under contemporary and projected future climate change at mid (2040) and late (2090) century for baseline and best-efforts mitigation scenario.

Field	Description
nzsegment	Stream segment ID from RECv2.4
subcatchment	Major sub-catchment
catchment	Wairoa catchment
netload	SedNetNZ modelled annual routed net suspended sediment load (t yr^{-1}).
mid26_min **mid26_med** **mid26_max**	Minimum, median, and maximum net sediment load under future climate change using RCP2.6 at mid-century (t yr^{-1}).
mid45_min **mid45_med** **mid45_max**	Minimum, median, and maximum net sediment load under future climate change using RCP4.5 at mid-century (t yr^{-1}).
mid60_min **mid60_med** **mid60_max**	Minimum, median, and maximum net sediment load under future climate change using RCP6.0 at mid-century (t yr^{-1}).
mid85_min **mid85_med** **mid85_max**	Minimum, median, and maximum net sediment load under future climate change using RCP8.5 at mid-century (t yr^{-1}).
lat26_min **lat26_med** **lat26_max**	Minimum, median, and maximum net sediment load under future climate change using RCP2.6 at late century (t yr^{-1}).
lat45_min **lat45_med** **lat45_max**	Minimum, median, and maximum net sediment load under future climate change using RCP4.5 at late century (t yr^{-1}).
lat60_min **lat60_med** **lat60_max**	Minimum, median, and maximum net sediment load under future climate change using RCP6.0 at late century (t yr^{-1}).
lat85_min **lat85_med** **lat85_max**	Minimum, median, and maximum net sediment load under future climate change using RCP8.5 at late century (t yr^{-1}).