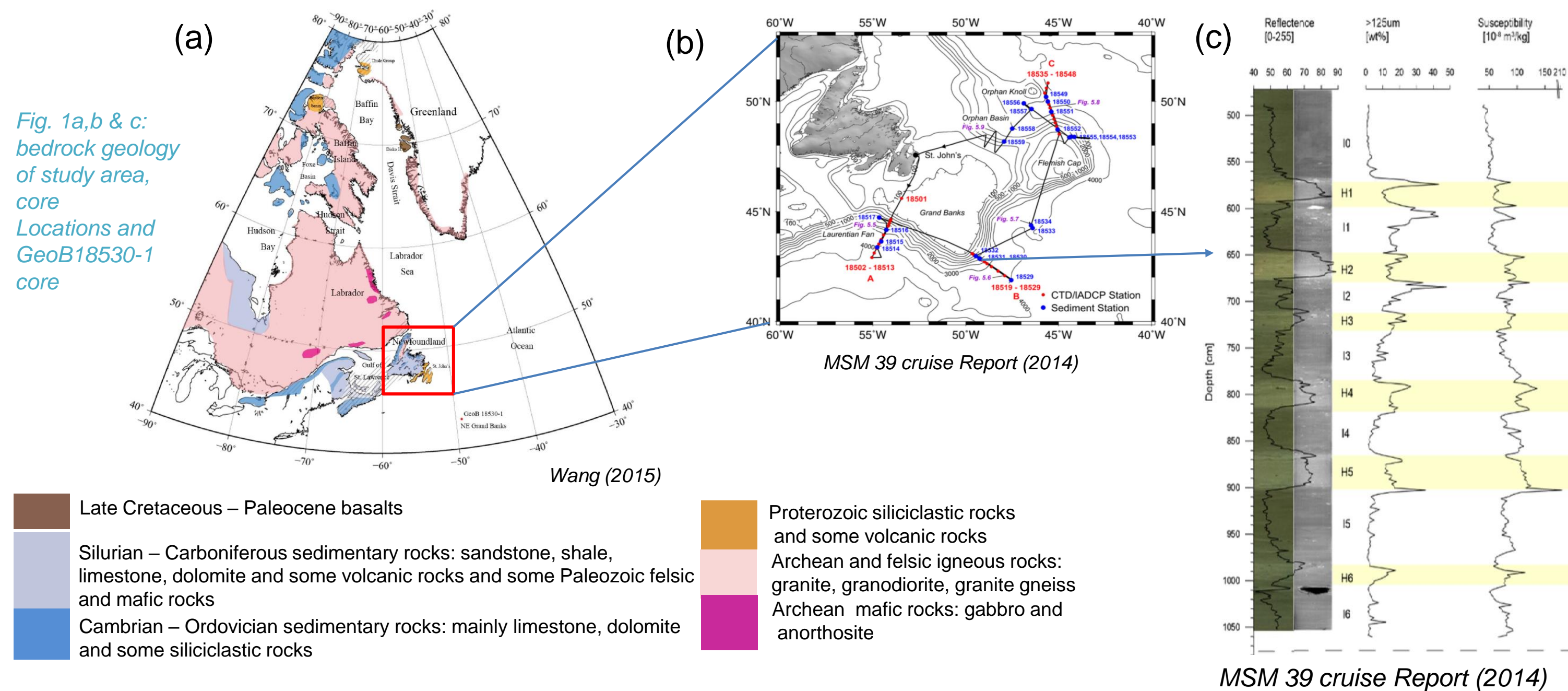


Investigating the internal lithological structure and rock magnetic signature of Heinrich Event layers at SE Grand Banks Slope Newfoundland

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Introduction



The last glacial period was marked by short, extreme episodic calving events of the Laurentide ice sheet that disgorged massive icebergs into the North Atlantic Ocean that formed the so-called Heinrich Event layers—light bands rich in detrital carbonates (Heinrich 1988; Bond et al., 1992).

This project aims at identifying and classifying the petrology of ice-rafted detritus (IRD) and their potential parental sources (Fig. 1a), investigate the internal lithological structure of each Heinrich Event layer to determine the chronology and intensity of IRD deposition from specific source regions during each Event which will help in constructing the Laurentide ice sheet collapse cycles.

Result

Here, we present various IRD petrology (Fig. 3), Isothermal Remanent Magnetization (IRM) acquisition curves of single IRD rock types and their count records (Fig. 4). Only IRD >1mm in sizes acquired at lower section (550–1054 cm) of core GeoB18530-1 with 2.3cm sample resolution are used as the basis of this study.

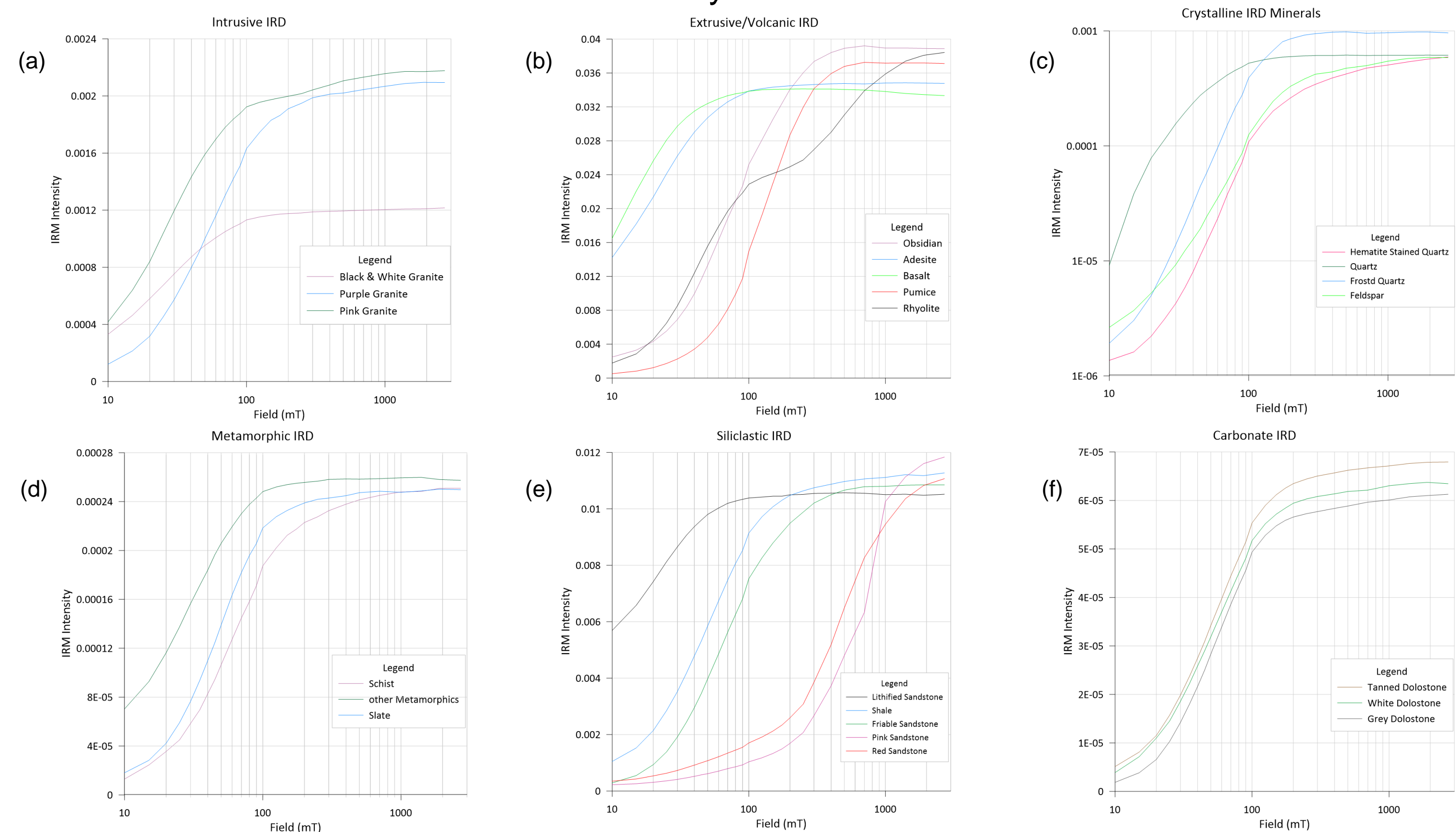


Fig 2: IRM acquisition curves of single representative of IRD rock types - a) intrusive b) volcanic or extrusive c) crystalline rock forming minerals d) Metamorphic and the sedimentary e) siliciclastic & f) carbonates



IRD classification and counts

Twenty-three different IRD rock types were identified and broadly classified into three major groups namely; sedimentary, igneous (including crystalline rock forming minerals) and metamorphic.

Some of the IRD rock types show systematic increase in occurrences during each H-event phase whereas others are virtually off-phase with the event and display higher abundance during ambient sedimentation.

Many of the IRD rock types depict higher input at the bottom and top of each event layer highlighting a pattern or structure within the layers.

The earliest event (H6) represents one of the episode with least IRD abundance.

Fig. 3: Exemplary images (Keyence VHX 6000, Magnification 200x) of IRD particles >1mm representing all observed IRD rock and/or mineral types in core GeoB18530-1 sorted by rock classes

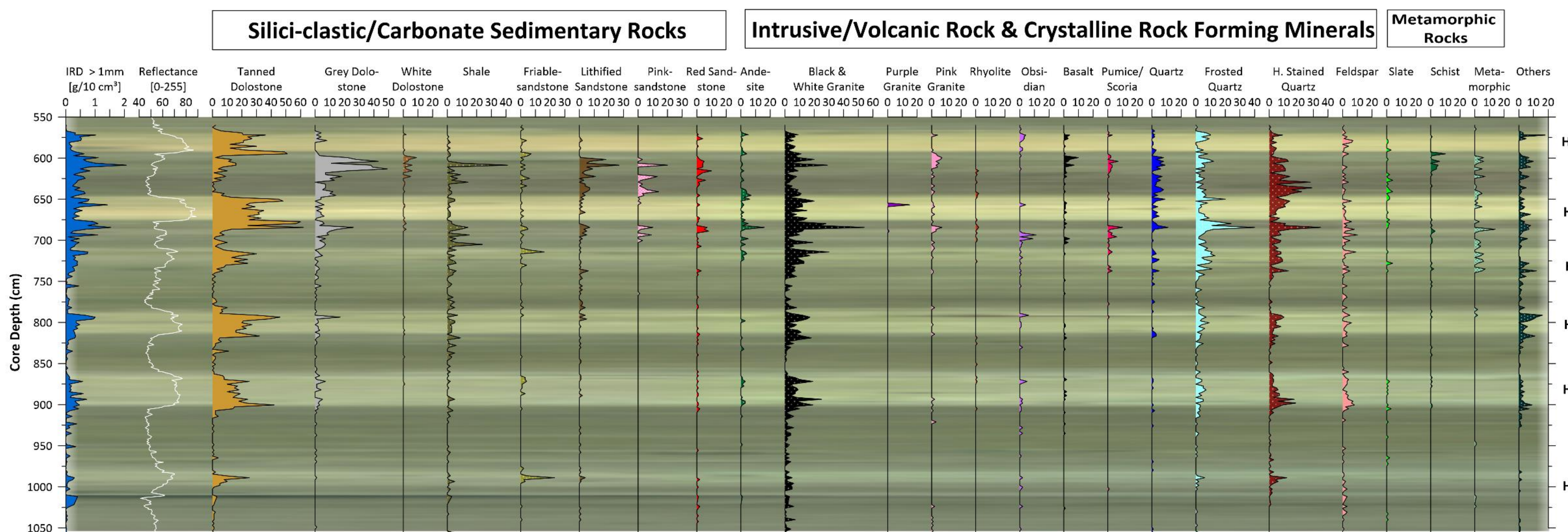


Fig. 4: IRD counts of 23 different rock types and crystalline rock forming minerals obtained from the lower section of core GeoB18530-1 (550–1054 cm). The backdrop is an expanded color linescan of the core.