

DATA

The data for the Yilgarn laterite geochemical database are supplied in two directories: -

- i) An Essentials directory includes a simple tab-delimited text file. This contains only those analyses that were plotted to illustrate Record 2007/9 and comprises the bulk of the analyses, with their locations, 250k map sheet, sample types, landform and sample site notes. A small number of standards, duplicates, reference materials and samples that were inconsistent with the sampling criteria have been eliminated. These 'essential' data are easily imported into a spreadsheet or database and are ready for plotting and data analysis. The first record contains the field headers, which should be self-explanatory.
- ii) A FullData directory includes a MS-Access database with a number of tables (and the equivalent text files) and are described below. These include all the data given in the 'essentials' text file above, together with standards, duplicates, reference materials and any extra samples, as well as information on sites that were not sampled and the reasons for this. All relevant metadata are included.

THE FULL DATA

This part of the document refers to the tables in the MS-Access database. These are for those interested in the data in detail, including those interested in quality control.

i) **AtlasAnalyses : Table**

CSIRONo: The sample number.

Lab Repeat: If 1 it is a repeat, if 0 it is not.

Duplicate: FD = field duplicate; RD = repeat duplicate or a leveller analysis; 'Nil' = normal sample.

Comment: Comments on analytical history.

SubmissionNo: Job number with UltraTrace Laboratories

LOISubmissionNo: Job number with Ultratrace for ignition loss

Plotted: If 'yes' used in Record 2007/9 illustrations. If 'no', not used.

Analytes are given as oxides first and then elements in alphanumeric order. The values are in the units given in Table 1 in Record 2007/9. Negative values indicate below detection. _FUS indicates fusion; _MAD indicates multi-acid digest where elements determined by two methods. LOI1000 is ignition loss at 1000°C.

PEG4, CHI6 are the dimensionless additive indices referred to in Record 2007/9.

AlkalineTypicality, GraniteTypicality, AlkalineGM and GraniteGM are in percent and refer to the typicalities and group membership probabilities of belonging to alkaline or granite rock groupings, as determined by multivariate analysis.

ii) **AtlasAnalysesPGE : Table**

This gives the full PGE analytical data plus Au determined by Ni fire assay with ICP-MS finish. If only Pt is listed, this was determined by ICP-MS after an aqua-regia digest. Explanations of fields are the same as given above.

iii) **AtlasAnalysisLog : Table**

This table tracks laboratory issues. Under analysis type, PGE Suite covers Au and the platinoids by Ni Fire Assay with ICP-MS finish and SLA Suite stands for Standard Laterite Analysis Suite, which covers the remaining elements using methods given in the Record. LOI is ignition loss.

iv) **AtlasLaboratory : Table**

This indicates the laboratory used and the contact there.

v) **AtlasMethods : Table**

This details the analytical methods and digests used.

vi) **AtlasSampleCharacteristics : Table**

This table contains descriptive information on the sample materials themselves, including their classification, the state of the cutan, range of sizes etc., and the nature of the sample site.

'Wear' of cutans is not necessarily limited to abrasion; it can be by solution.

Vegetation: This is very broad – determined by samplers and not by botanists.

Site area: given in metres.

Size – low and high: Pisolith/nodule size range in centimetres.

vii) AtlasSampleDetailsALL : Table

This tracks the derivation of the samples from this and other collections, such as AGE and ASTRO. It also indicates locations, sampling date, the sampler and any digital photos taken, the basement geology and terrain. These photos do not form part of Record 2007/9, but are available, on request on two DVDs, from the Geological Survey of WA at a small extraction cost.

viii) Standard: AnalysisStandards : Table

This gives replicate analyses of two regolith standard reference materials that were entered into the analytical stream, together with their batch job number.

IGNITION LOSSES

Ignition losses at 1000°C were determined at the very end of the project. Calculation of closure (sum of oxides, S as SO₂ and ignition loss) for the data that were plotted indicated very good results. By far the majority (96%) deviated from 100% by less than $\pm 1\%$. However, 11 samples deviated by more than $\pm 4\%$ and 23 by more than $\pm 2\%$. These are identified below.

Closure deviation can be due to errors in ignition loss determination, variation in moisture content during storage or errors in one or more oxides etc. As these determinations were made late in the process, there was insufficient time to investigate this very small proportion of aberrant samples (0.75%).

CSIRO Sample No	% Deviation
104106	-9.09
102737	-5.32
100860	-5.00
102724	-4.49
101825	-4.18
101087	-4.17
104224	-4.16
104832	-2.88
104739	-2.30
102583	-2.12
101179	2.04
101604	2.10
101776	2.15
102613	2.52
101655	2.60
100692	3.19
101379	3.65
104351	3.68
104192	3.96
104386	4.06
104461	5.11
102492	5.67
102731	6.22