The Multiple Bischke Plot Analysis,
A Simple and Powerful Graphic Tool for Integrated Stratigraphic Studies

T.S.I.
Tecto Sedi Integrated

PDVSA

Chatellier, J-Y.* and Porras, C.

PDVSA Oriente, Estudios Integrados Pirital, Puerto La Cruz, Venezuela

* Present address: Tecto Sedi Integrated 271 Arbour Lake Way NW, Calgary, T3G 3Z7
E-mail: jchatellier@shaw.ca

ABSTRACT

Establishing the correct stratigraphy is not always a simple task, especially when dealing with tectonically complex areas or where tectonics had locally controlled the sedimentation. Bischke in 1994 introduced a simple technique to compare the gradual change in thicknesses in two wells, the difference being plotted against the reference well's depth. The MBPA (Multiple Bischke Plot Analysis), derived from the original method, allows a very quick and objective review of the stratigraphy, be it done conventionally or using sequence stratigraphy.

The MBPA invokes many wells at the same time; thus, the problem well and the problem zone can be readily identified as the anomaly shows-up in all paired well comparisons. One of the interests of the method is that it does not matter how many faults or folds are present between the wells under study, as only disturbance within the wells will show up in the analysis.

Stacking several Bischke plots on the same diagram gives a different view of the coherency of the stratigraphy and of the structure. Thus, trend-similarity is more obvious than in the MBPA, whereas local anomalies are less readily apparent.

The power and limitations of both methods are demonstrated through a review of case examples from various parts of the world. Thus, the MBPA allows one to quickly identify anomalies and to distinguish between faults of various types, unconformity, or wrong correlation. The method does not solve the problem but allows geoscientists to focus their attention on the real problem be it a marker, a well, or a geographic area.
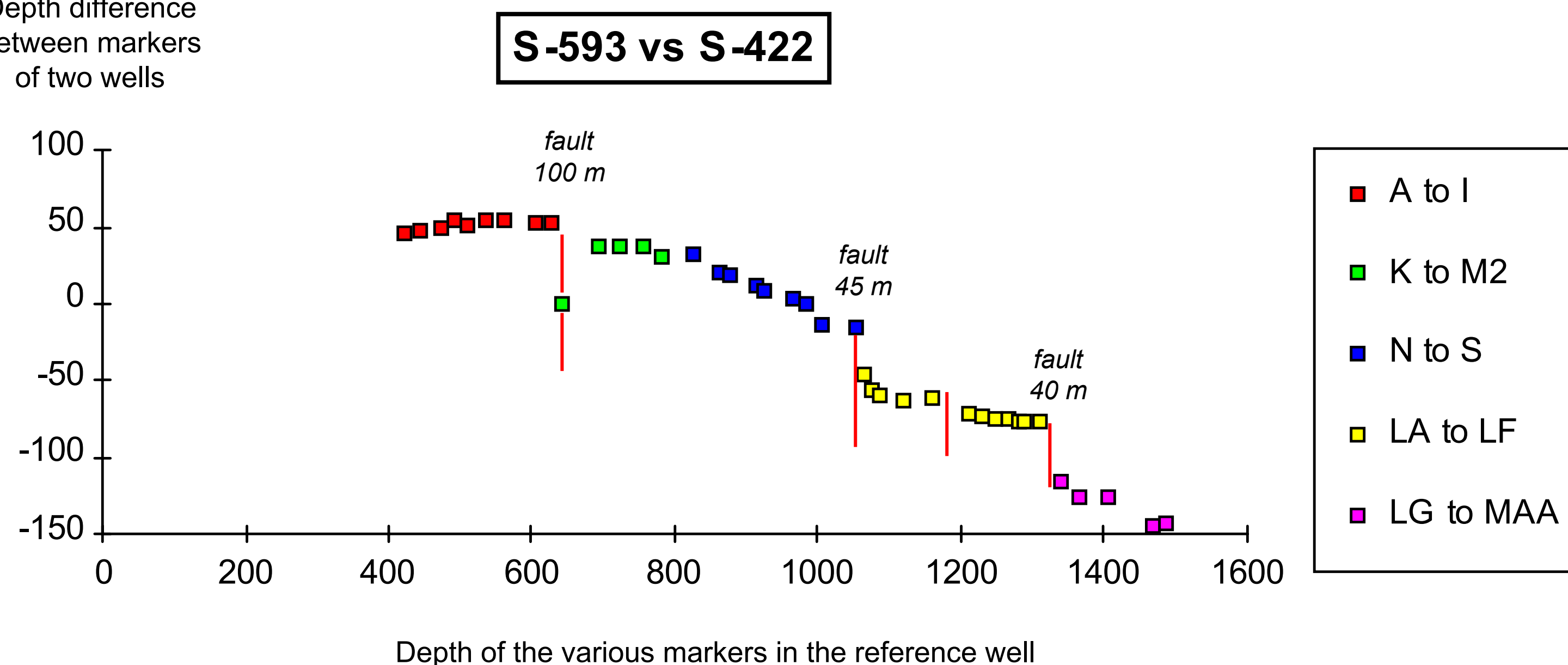
Complex sedimentology and active tectonism can be seen in a different way through the MBPA, especially when displaying the various Bischke plots on a map.

A brief review of the MBPA history

The original method was first published by Bischke in 1994 as the $\Delta d/d$ plot. It was geared at understanding growth sedimentation patterns.

The Multiple Bischke Plot Analysis (MBPA) was devised by the first author in 1996 while revising the stratigraphy of the Furrial Field. The philosophy of the MBPA was summarized in Sanchez et al. (1997) whereas one case study from Lake Maracaibo was published in Chatellier et al. (1999). The present paper aims at stating our understanding of the power and limitation of the method that is becoming every day more popular especially since the 1999 paper by Bischke et al.

S-593 vs S-422

Depth difference between markers of two wells

Depth of the various markers in the reference well

- A to I
- K to M2
- N to S
- LA to LF
- LG to MAA

SINGLE BISCHKE PLOT

A Bischke Plot allows you to check quickly and efficiently your correlation.

The example to the left shows well that the Bischke plot gives full support to the interpreted faults in well 422, well 593 supposedly being unfaulted.
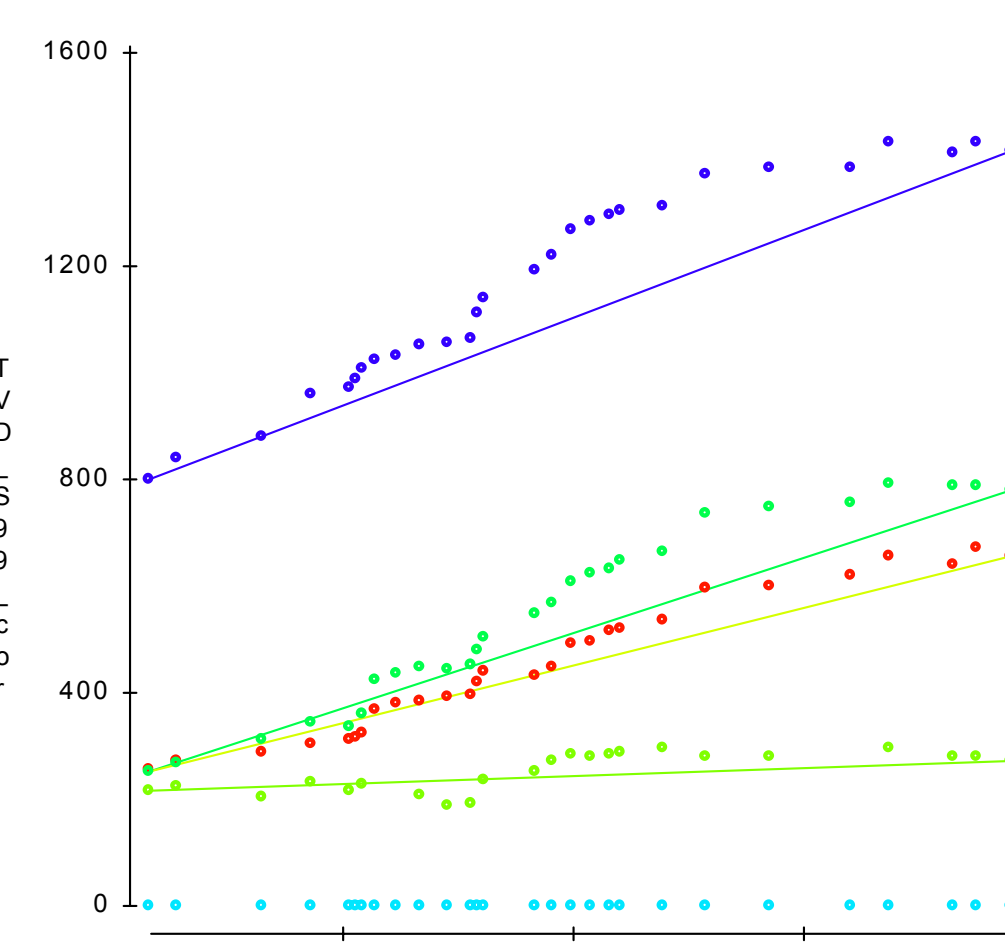Faulted tops as well as drag folds are readily identifiable.

Other faults of lesser magnitude could be proposed but would need extra support.

Various types of Multiple Bischke Plot Analysis
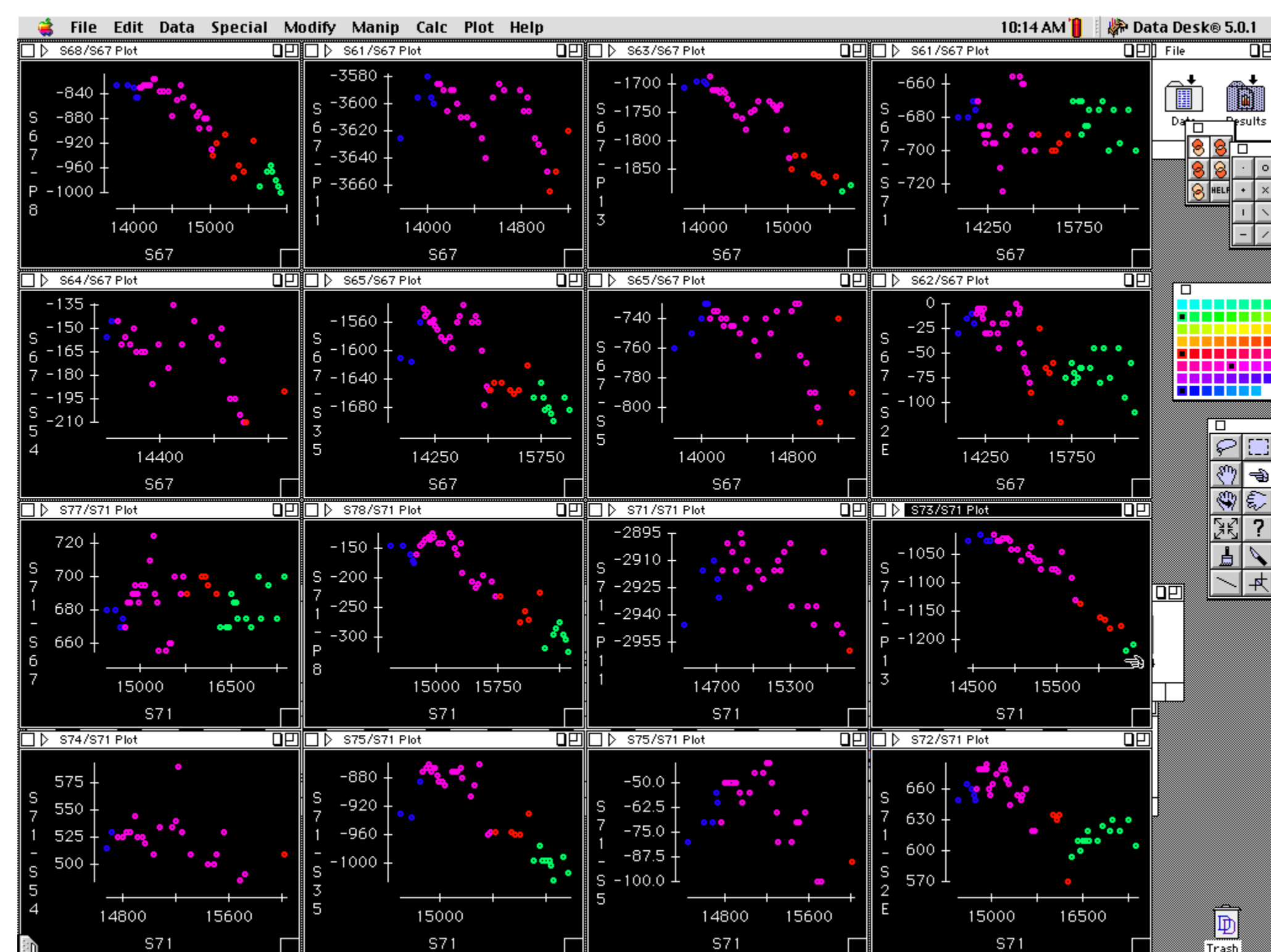
MBPA

STACKED MBPA

INVERTED STACKED MBPA