

# MATECT UTILITIES FOR USE WITH ECT

## OVERVIEW

The **PTL Matest** software is an extensive set of tools for **viewing** and **modifying sensitivity map** files and for **reconstructing images** from **captured capacitance** data. The software is supplied as a set of **Matlab m files**, which must be run under **Matlab 5.3 or 6**.

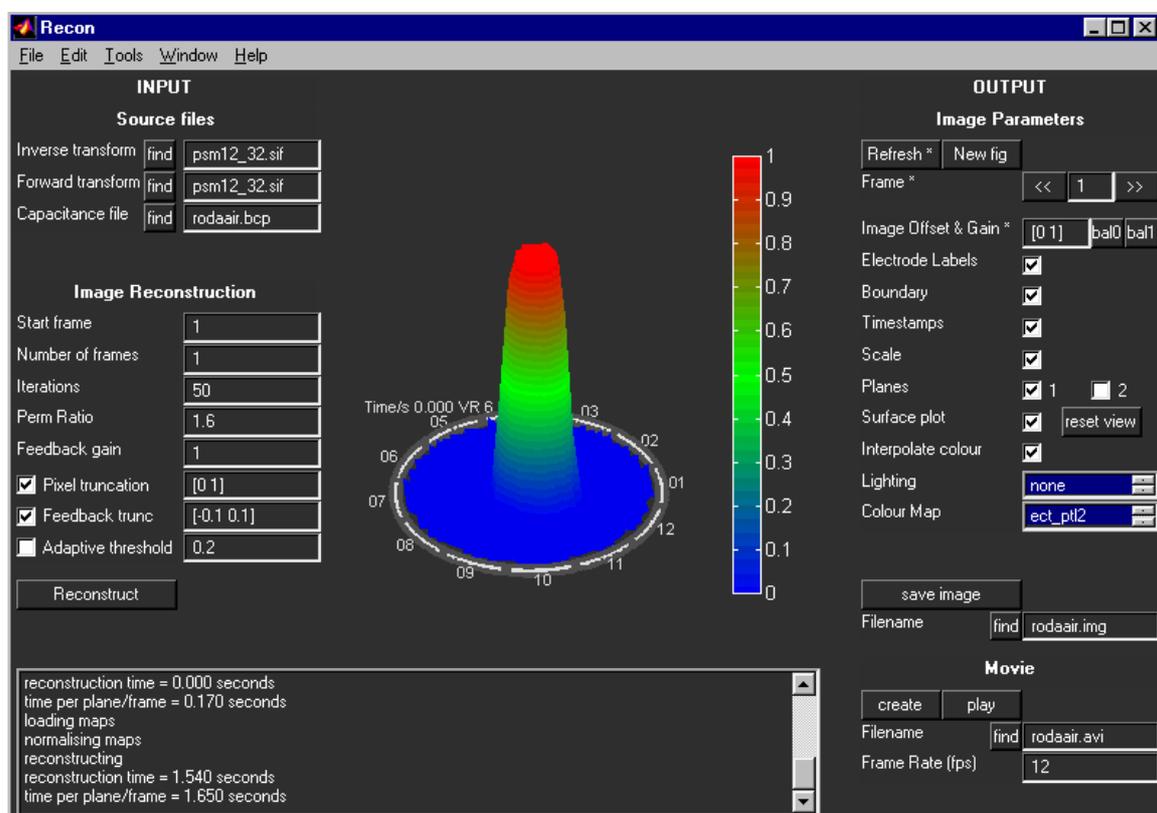
**Sensitivity maps** can be **viewed** and **compared** in both **graphical** and **text** formats. They can also be **converted** from **ECT32** format to **PCECT** format and vice-versa and also into suitable formats for use with high-permittivity materials such as water. Maps with a limited number of pixels can also be generated to assist correlation of data from two image planes.

**Images** can be constructed from **capacitance data** using any combinations of **forward** and **inverse** transforms (with any pixel resolution) and permittivity models. **Images** can be displayed in either **2** or **3** dimensions and **moving image** files can also be generated (**Matlab 6** only).

**Capacitances** between **electrodes** can be calculated for specific circular sensor geometries. **Capacitance data** files can be **modified** to adjust or correct the **timing interval** between consecutive frames and data for a single electrode-pair can be extracted to a new file to assist **correlation** of data between **two measurement planes**.

**Modified inverse transforms** based on methods described by **Landweber** and **Tikhonov** can be generated from **sensitivity maps** for improved **image reconstruction accuracy**.

The figure below shows the **main window** for the image reconstruction program **Recon**.



## SUMMARY OF UTILITIES IN MATECT

### Program

<b>ect_smapplot.m</b>	Plots sensitivity maps individually or in sets. Also displays active pixels.
<b>ect_smapdump.m</b>	Displays sensitivity maps in ASCII text format or generates output files in ASCII format.
<b>ect_smapcomp.m</b>	Compares 2 similar sensitivity maps in graphical format.
<b>convmap.m</b>	Converts maps from ECT32 format to PCECT format or vice-versa.
<b>ect_convmap.m</b>	Converts standard maps to water maps.
<b>ect_modmap</b>	Produces map with limited number of pixels from standard map.
<b>recon.m</b>	Converts a capacitance data file into a permittivity image using a forward and reverse transform and iteration.
<b>maskrecon.m</b>	Reads a twin-plane capacitance file and generates two image data files containing a limited number of pixel values for data correlation.
<b>Interp.m</b>	Time-corrects capacitance data files and allows timing modifications.
<b>extractchan.m</b>	Extracts a set of capacitance data in ASCII format for a single electrode-pair from a binary capacitance data file for data correlation.
<b>ect_cap.m</b>	Calculates inter-electrode capacitances for circular ECT sensors.
<b>ect_landmap.m</b>	Generates Landweber inverse transform from sensitivity map.
<b>ect_tikmap.m</b>	Generates Tikhonov inverse transform from sensitivity map.

For further information, please contact us at the address below, or visit our internet web site at : [www.tomography.com](http://www.tomography.com) which contains sales and application data.

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