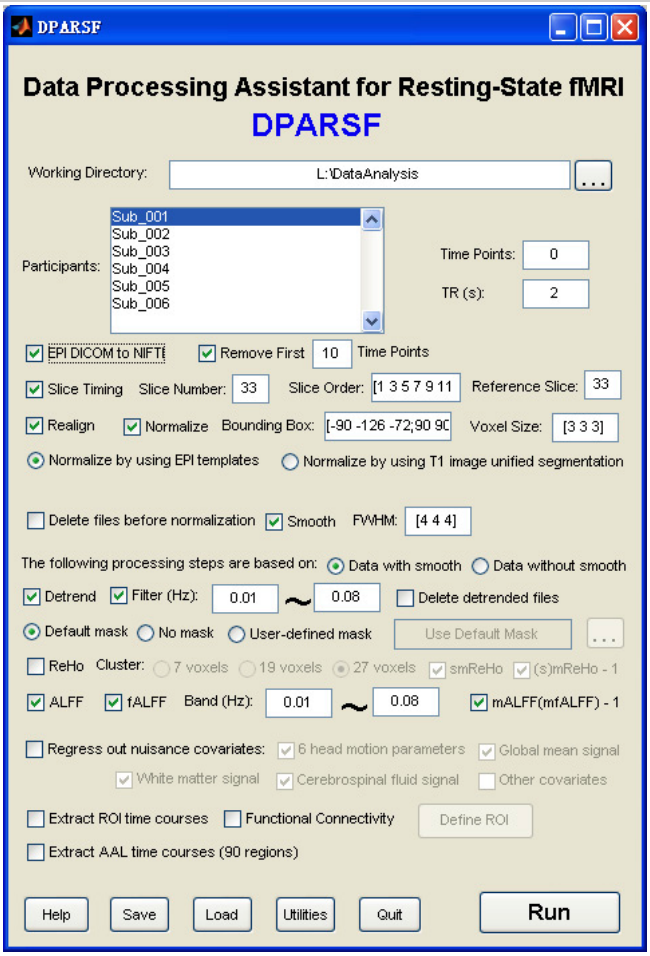
Forum of resting-state fMRI

Data Processing Assistant for Resting-State fMRI (DPARSF) V1.0

Tue, 06/30/2009 - 07:18 — YAN Chao-Gan



Data Processing Assistant for Resting-State fMRI (DPARSF) is a convenient plug-in software based on SPM and REST. You just need to arrange your DICOM files, and click a few buttons to set parameters, DPARSF will then give all the preprocessed (slice timing, realign, nomalize, smooth) data, FC, ReHo, ALFF and fALFF results. DPARSF can also create a report for excluding subjects with excessive head motion and generate a set of pictures for easily checking the effect of normalization. You can use DPARSF to extract AAL or ROI time courses (or extract Gray Matter Volume of AAL regions, command line only) efficiently if you want to perform small-world analysis. This software is very easy to use, just click on buttons if you are not sure what it means, popup tips would tell you what you need to do. You also can download a MULTIMEDIA COURSE to know more about how to use this software. Add DPARSF's directory to MATLAB's path and enter "DPARSF" in the command window of MATLAB to enjoy it.

The latest release is **DPARSF_V1.0_100510**.

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Multimedia Course: Data Processing of Resting-State fMRI

New features of DPARSF_V1.0_100510:
1. Added a right-click menu to delete all the participants' ID.
2. Fixed a bug in converting DICOM files to NIfTI in Windows 7, thanks to Prof. Chris Rorden's new dcm2nii.
3. Now will detect if co* T1 image (T1 image which is reoriented to the nearest orthogonal direction to 'canonical space' and removed excess air surrounding the individual as well as parts of the neck below the cerebellum) exists before normalization by using T1 image unified segmentation. T1 image without 'co' is also allowed in the analysis now.

New features of DPARSF_V1.0_100420:
1. After extracting ROI time courses, not just functional connectivity will be calculated, but also transform the r values to z values by Fisher's z transformation.
2. Fixed a bug in generating pictures for checking normalization when the bounding box is not [-90 -126 -72;90 90 108].

New features of DPARSF_V1.0_100201:
1. Save the configuration parameters automatically.
2. Fixed the bug in converting DICOM files to NIfTI files when DPARSF stored under C:\Program Files\Matlab\Toolbox.
3. Fixed the bug in converting DICOM files to NIfTI files when the filename without extension.

New features of DPARSF_V1.0_091215:
1. Also can regress out other kind of covariates other than head motion parameters, Global mean signal, White matter signal and Cerebrospinal fluid signal.

New features of DPARSF_V1.0_091201:
1. Added an option to choose different Affine Regularisation in Segmentation: East Asian brains (eastern) or European brains (mni). The interpretation of this option from SPM is: “If you can approximately align your images prior to running Segment, then this will increase the robustness of segmentation. Another thing that may help would be to change the regularisation of the initial affine registration, via Segment->Custom->Affine Regularisation. If you set this to "ICBM space template - East Asian brains (or European brains)", then the algorithm will make use of knowledge about the approximate variability to expect among the width/length etc of the brains of the population.” “The prior probability distribution for affine registration of East-Asian brains to MNI space was derived from 65 seg_inv_sn.mat files from Singapore. The distribution of affine transforms of European brains was estimated from: Incorporating Prior Knowledge into Image Registration NeuroImage, Volume 6, Issue 4, November 1997, Pages 344-352 J. Ashburner, P. Neelin, D. L. Collins, A. Evans, K. Friston.”
2. Added a Utility: change the Prefix of Images since DPARSF need some special prefixes in some cases. For example, if you do not have T1 DICOM files and your T1 NIFTI files are not initiated with “co”, then you can use this utility to add the “co” prefix to let DPARSF perform normalization based on segmentation of T1 images.
3. Added a popup menu to delete selected subject by right click.
4. Added a checkbox for removing first time points.
5. Added a function to close wait bar when program finished.

New features of DPARSF_V1.0Beta_091001:

1. SPM8 compatible.
2. Generate the pictures (output in {Working Directory}\PicturesForChkNormalization\) for checking normalization.

New features of DPARSF_V1.0Beta_090911:
1. Fixed the bug of setting user's defined mask.

New features of DPARSF_V1.0Beta_090901:
1. Fixed the bug of setting FWHM kernel of smooth.
2. Smooth the mReHo results.
3. Remove any number of the first time points.

New features of DPARSF_V1.0Beta_090713:
1. mReHo - 1, mALFF - 1, mfALFF - 1 function.
2. Creating report for excessive head motion subjects excluding.

New features of DPARSF_V1.0Beta_090701:
1. Linux compatible.

DPARSF's standard processing steps:
1. Convert DICOM files to NIFTI images.
2. Remove First 10 (more or less) Time Points.
3. Slice Timing.
4. Realign.
5. Normalize.
6. Smooth (optional).
7. Detrend.
8. Filter.
9. Calculate ReHo, ALFF, fALFF (optional).
10. Regress out the Covariables (optional).
11. Calculate Functional Connectivity (optional).
12. Extract AAL or ROI time courses for further analysis (optional).
13. Extract Gray Matter Volume of AAL regions for further analysis (optional, command line only).

If you think DPARSF is useful for your work, citing it in your paper would be greatly appreciated.

Something like "... preprocessing were carried out using Statistical Parametric Mapping (SPM5, http://www.fil.ion.ucl.ac.uk/spm) and Data Processing Assistant for Resting-State fMRI (DPARSF) (Yan and Zang, 2010) ..." in your method session would be fine. If FC, ReHo, ALFF or fALFF is computed, please also cite Resting-State fMRI Data Analysis Toolkit (REST, by Song et al., http://www.restfmri.net).

Reference: Yan C and Zang Y (2010) DPARSF: a MATLAB toolbox for "pipeline" data analysis of resting-state fMRI. Front. Syst. Neurosci. 4:13. doi:10.3389/fnsys.2010.00013

DPARSF is based on MRIcroN' dcm2nii, SPM and REST, if you used the related modules, the following software may need to be cited:
Step 1: MRIcroN software (by Chris Rorden, http://www.mricro.com).
Step 3 - Step 6: Statistical Parametric Mapping (SPM5, http://www.fil.ion.ucl.ac.uk/spm).
Step 7 - Step 11: Resting-State fMRI Data Analysis Toolkit (REST, by SONG Xiao-Wei et al., http://www.restfmri.net).

‹ Threshold in the viewer vierwer错误 ›

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Information of 90 AAL Regions used in DPARSF

Sat, 02/27/2010 - 14:08 — YAN Chao-Gan

Information of 90 AAL Regions used in DPARSF:

					volume-based ROI			volume-based ROI	
Labels	Regions	Regions	abbr.	x(voxel)	y(voxel)	z(voxel)	x(mm)	y(mm)	z(mm)
1	Precentral_L	Precental gyrus	PreCG.L	51	120	123	-38.65	-5.68	50.94
2	Precentral_R	Precental gyrus	PreCG.R	131	118	124	41.37	-8.21	52.09
3	Frontal_Sup_L	Superior frontal gyrus, dorsolateral	SFGdor.L	72	161	114	-18.45	34.81	42.20
4	Frontal_Sup_R	Superior frontal gyrus, dorsolateral	SFGdor.R	112	157	116	21.90	31.12	43.82
5	Frontal_Sup_Orb_L	Superior frontal gyrus, orbital part	ORBsup.L	73	173	59	-16.56	47.32	-13.31
6	Frontal_Sup_Orb_R	Superior frontal gyrus, orbital part	ORBsup.R	108	174	58	18.49	48.10	-14.02
7	Frontal_Mid_L	Middle frontal gyrus	MFG.L	57	159	107	-33.43	32.73	35.46
8	Frontal_Mid_R	Middle frontal gyrus	MFG.R	128	159	106	37.59	33.06	34.04
9	Frontal_Mid_Orb_L	Middle frontal gyrus, orbital part	ORBmid.L	59	176	62	-30.65	50.43	-9.62
10	Frontal_Mid_Orb_R	Middle frontal gyrus, orbital part	ORBmid.R	123	179	61	33.18	52.59	-10.73
11	Frontal_Inf_Oper_L	Inferior frontal gyrus, opercular part	IFGoperc.L	42	139	91	-48.43	12.73	19.02
12	Frontal_Inf_Oper_R	Inferior frontal gyrus, opercular part	IFGoperc.R	140	141	93	50.20	14.98	21.41
13	Frontal_Inf_Tri_L	Inferior frontal gyrus, triangular part	IFGtriang.L	44	156	86	-45.58	29.91	13.99
14	Frontal_Inf_Tri_R	Inferior frontal gyrus, triangular part	IFGtriang.R	140	156	86	50.33	30.16	14.17
15	Frontal_Inf_Orb_L	Inferior frontal gyrus, orbital part	ORBinf.L	54	157	60	-35.98	30.71	-12.11
16	Frontal_Inf_Orb_R	Inferior frontal gyrus, orbital part	ORBinf.R	131	158	60	41.22	32.23	-11.91
17	Rolandic_Oper_L	Rolandic operculum	ROL.L	43	118	86	-47.16	-8.48	13.95
18	Rolandic_Oper_R	Rolandic operculum	ROL.R	143	120	87	52.65	-6.25	14.63
19	Supp_Motor_Area_L	Supplementary motor area	SMA.L	85	131	133	-5.32	4.85	61.38
20	Supp_Motor_Area_R	Supplementary motor area	SMA.R	99	126	134	8.62	0.17	61.85
21	Olfactory_L	Olfactory cortex	OLF.L	82	141	61	-8.06	15.05	-11.46
22	Olfactory_R	Olfactory cortex	OLF.R	100	142	61	10.43	15.91	-11.26
23	Frontal_Sup_Medial_L	Superior frontal gyrus, medial	SFGmed.L	85	175	103	-4.80	49.17	30.89
24	Frontal_Sup_Medial_R	Superior frontal gyrus, medial	SFGmed.R	99	177	102	9.10	50.84	30.22
25	Frontal_Mid_Orb_L	Superior frontal gyrus, medial orbital	ORBsupmed.L	85	180	65	-5.17	54.06	-7.40
26	Frontal_Mid_Orb_R	Superior frontal gyrus, medial orbital	ORBsupmed.R	98	178	65	8.16	51.67	-7.13
27	Rectus_L	Gyrus rectus	REC.L	85	163	54	-5.08	37.07	-18.14
28	Rectus_R	Gyrus rectus	REC.R	98	162	54	8.35	35.64	-18.04
29	Insula_L	Insula	INS.L	55	133	75	-35.13	6.65	3.44
30	Insula_R	Insula	INS.R	129	132	74	39.02	6.25	2.08
31	Cingulum_Ant_L	Anterior cingulate and paracingulate gyri	ACG.L	86	161	86	-4.04	35.40	13.95
32	Cingulum_Ant_R	Anterior cingulate and paracingulate gyri	ACG.R	98	163	88	8.46	37.01	15.84
33	Cingulum_Mid_L	Median cingulate and paracingulate gyri	DCG.L	85	111	114	-5.48	-14.92	41.57
34	Cingulum_Mid_R	Median cingulate and paracingulate gyri	DCG.R	98	117	112	8.02	-8.83	39.79
35	Cingulum_Post_L	Posterior cingulate gyrus	PCG.L	85	83	97	-4.85	-42.92	24.67
36	Cingulum_Post_R	Posterior cingulate gyrus	PCG.R	97	84	94	7.44	-41.81	21.87
37	Hippocampus_L	Hippocampus	HIP.L	65	105	62	-25.03	-20.74	-10.13
38	Hippocampus_R	Hippocampus	HIP.R	119	106	62	29.23	-19.78	-10.33
39	ParaHippocampal_L	Parahippocampal gyrus	PHG.L	69	110	51	-21.17	-15.95	-20.70
40	ParaHippocampal_R	Parahippocampal gyrus	PHG.R	115	111	52	25.38	-15.15	-20.47
41	Amygdala_L	Amygdala	AMYG.L	67	125	55	-23.27	-0.67	-17.14
42	Amygdala_R	Amygdala	AMYG.R	117	127	54	27.32	0.64	-17.50
43	Calcarine_L	Calcarine fissure and surrounding cortex	CAL.L	83	47	78	-7.14	-78.67	6.44
44	Calcarine_R	Calcarine fissure and surrounding cortex	CAL.R	106	53	81	15.99	-73.15	9.40

45	Cuneus_L	Cuneus	CUN.L	84	46	99	-5.93	-80.13	27.22
46	Cuneus_R	Cuneus	CUN.R	104	47	100	13.51	-79.36	28.23
47	Lingual_L	Lingual gyrus	LING.L	75	58	67	-14.62	-67.56	-4.63
48	Lingual_R	Lingual gyrus	LING.R	106	59	68	16.29	-66.93	-3.87
49	Occipital_Sup_L	Superior occipital gyrus	SOG.L	73	42	100	-16.54	-84.26	28.17
50	Occipital_Sup_R	Superior occipital gyrus	SOG.R	114	45	103	24.29	-80.85	30.59
51	Occipital_Mid_L	Middle occipital gyrus	MOG.L	58	45	88	-32.39	-80.73	16.11
52	Occipital_Mid_R	Middle occipital gyrus	MOG.R	127	46	91	37.39	-79.70	19.42
53	Occipital_Inf_L	Inferior occipital gyrus	IOG.L	54	48	64	-36.36	-78.29	-7.84
54	Occipital_Inf_R	Inferior occipital gyrus	IOG.R	128	44	64	38.16	-81.99	-7.61
55	Fusiform_L	Fusiform gyrus	FFG.L	59	86	52	-31.16	-40.30	-20.23
56	Fusiform_R	Fusiform gyrus	FFG.R	124	87	52	33.97	-39.10	-20.18
57	Postcentral_L	Postcentral gyrus	PoCG.L	48	103	121	-42.46	-22.63	48.92
58	Postcentral_R	Postcentral gyrus	PoCG.R	131	101	125	41.43	-25.49	52.55
59	Parietal_Sup_L	Superior parietal gyrus	SPG.L	67	66	131	-23.45	-59.56	58.96
60	Parietal_Sup_R	Superior parietal gyrus	SPG.R	116	67	134	26.11	-59.18	62.06
61	Parietal_Inf_L	Inferior parietal, but supramarginal and angular gyri	IPL.L	47	80	119	-42.80	-45.82	46.74
62	Parietal_Inf_R	Inferior parietal, but supramarginal and angular gyri	IPL.R	136	80	122	46.46	-46.29	49.54
63	SupraMarginal_L	Supramarginal gyrus	SMG.L	34	92	102	-55.79	-33.64	30.45
64	SupraMarginal_R	Supramarginal gyrus	SMG.R	148	94	106	57.61	-31.50	34.48
65	Angular_L	Angular gyrus	ANG.L	46	65	108	-44.14	-60.82	35.59
66	Angular_R	Angular gyrus	ANG.R	136	66	111	45.51	-59.98	38.63
67	Precuneus_L	Precuneus	PCUN.L	83	70	120	-7.24	-56.07	48.01
68	Precuneus_R	Precuneus	PCUN.R	100	70	116	9.98	-56.05	43.77
69	Paracentral_Lobule_L	Paracentral lobule	PCL.L	82	101	142	-7.63	-25.36	70.07
70	Paracentral_Lobule_R	Paracentral lobule	PCL.R	97	94	140	7.48	-31.59	68.09
71	Caudate_L	Caudate nucleus	CAU.L	79	137	81	-11.46	11.00	9.24
72	Caudate_R	Caudate nucleus	CAU.R	105	138	81	14.84	12.07	9.42
73	Putamen_L	Lenticular nucleus, putamen	PUT.L	66	130	74	-23.91	3.86	2.40
74	Putamen_R	Lenticular nucleus, putamen	PUT.R	118	131	74	27.78	4.91	2.46
75	Pallidum_L	Lenticular nucleus, pallidum	PAL.L	72	126	72	-17.75	-0.03	0.21
76	Pallidum_R	Lenticular nucleus, pallidum	PAL.R	111	126	72	21.20	0.18	0.23
77	Thalamus_L	Thalamus	THA.L	79	108	80	-10.85	-17.56	7.98
78	Thalamus_R	Thalamus	THA.R	103	108	80	13.00	-17.55	8.09
79	Heschl_L	Heschl gyrus	HES.L	48	107	82	-41.99	-18.88	9.98
80	Heschl_R	Heschl gyrus	HES.R	136	109	82	45.86	-17.15	10.41
81	Temporal_Sup_L	Superior temporal gyrus	STG.L	37	105	79	-53.16	-20.68	7.13
82	Temporal_Sup_R	Superior temporal gyrus	STG.R	148	104	79	58.15	-21.78	6.80
83	Temporal_Pole_Sup_L	Temporal pole: superior temporal gyrus	TPOsup.L	50	141	52	-39.88	15.14	-20.18
84	Temporal_Pole_Sup_R	Temporal pole: superior temporal gyrus	TPOsup.R	138	141	55	48.25	14.75	-16.86
85	Temporal_Mid_L	Middle temporal gyrus	MTG.L	34	92	70	-55.52	-33.80	-2.20
86	Temporal_Mid_R	Middle temporal gyrus	MTG.R	147	89	71	57.47	-37.23	-1.47
87	Temporal_Pole_Mid_L	Temporal pole: middle temporal gyrus	TPOmid.L	54	141	38	-36.32	14.59	-34.08
88	Temporal_Pole_Mid_R	Temporal pole: middle temporal gyrus	TPOmid.R	134	141	40	44.22	14.55	-32.23
89	Temporal_Inf_L	Inferior temporal gyrus	ITG.L	40	98	49	-49.77	-28.05	-23.17
90	Temporal_Inf_R	Inferior temporal gyrus	ITG.R	144	95	50	53.69	-31.07	-22.32

Re: Information of 90 AAL Regions used in DPARSF

Fri, 11/02/2012 - 09:28 — YAN Chao-Gan

Also, the information of the 116 AAL regions from MRIcroN:

1 Precentral_L 2001
2 Precentral_R 2002
3 Frontal_Sup_L 2101
4 Frontal_Sup_R 2102
5 Frontal_Sup_Orb_L 2111
6 Frontal_Sup_Orb_R 2112
7 Frontal_Mid_L 2201

8 Frontal_Mid_R 2202
9 Frontal_Mid_Orb_L 2211
10 Frontal_Mid_Orb_R 2212
11 Frontal_Inf_Oper_L 2301
12 Frontal_Inf_Oper_R 2302
13 Frontal_Inf_Tri_L 2311
14 Frontal_Inf_Tri_R 2312
15 Frontal_Inf_Orb_L 2321
16 Frontal_Inf_Orb_R 2322
17 Rolandic_Oper_L 2331
18 Rolandic_Oper_R 2332
19 Supp_Motor_Area_L 2401
20 Supp_Motor_Area_R 2402
21 Olfactory_L 2501
22 Olfactory_R 2502
23 Frontal_Sup_Medial_L 2601
24 Frontal_Sup_Medial_R 2602
25 Frontal_Med_Orb_L 2611
26 Frontal_Med_Orb_R 2612
27 Rectus_L 2701
28 Rectus_R 2702
29 Insula_L 3001
30 Insula_R 3002
31 Cingulum_Ant_L 4001
32 Cingulum_Ant_R 4002
33 Cingulum_Mid_L 4011
34 Cingulum_Mid_R 4012
35 Cingulum_Post_L 4021
36 Cingulum_Post_R 4022
37 Hippocampus_L 4101
38 Hippocampus_R 4102
39 ParaHippocampal_L 4111
40 ParaHippocampal_R 4112
41 Amygdala_L 4201
42 Amygdala_R 4202
43 Calcarine_L 5001
44 Calcarine_R 5002
45 Cuneus_L 5011
46 Cuneus_R 5012
47 Lingual_L 5021
48 Lingual_R 5022
49 Occipital_Sup_L 5101
50 Occipital_Sup_R 5102
51 Occipital_Mid_L 5201
52 Occipital_Mid_R 5202
53 Occipital_Inf_L 5301
54 Occipital_Inf_R 5302
55 Fusiform_L 5401
56 Fusiform_R 5402
57 Postcentral_L 6001
58 Postcentral_R 6002
59 Parietal_Sup_L 6101
60 Parietal_Sup_R 6102
61 Parietal_Inf_L 6201
62 Parietal_Inf_R 6202
63 SupraMarginal_L 6211
64 SupraMarginal_R 6212
65 Angular_L 6221
66 Angular_R 6222
67 Precuneus_L 6301
68 Precuneus_R 6302
69 Paracentral_Lobule_L 6401
70 Paracentral_Lobule_R 6402
71 Caudate_L 7001
72 Caudate_R 7002
73 Putamen_L 7011
74 Putamen_R 7012
75 Pallidum_L 7021
76 Pallidum_R 7022
77 Thalamus_L 7101
78 Thalamus_R 7102
79 Heschl_L 8101
80 Heschl_R 8102
81 Temporal_Sup_L 8111
82 Temporal_Sup_R 8112
83 Temporal_Pole_Sup_L 8121
84 Temporal_Pole_Sup_R 8122
85 Temporal_Mid_L 8201

86 Temporal_Mid_R 8202
87 Temporal_Pole_Mid_L 8211
88 Temporal_Pole_Mid_R 8212
89 Temporal_Inf_L 8301
90 Temporal_Inf_R 8302
91 Cerebelum_Crus1_L 9001
92 Cerebelum_Crus1_R 9002
93 Cerebelum_Crus2_L 9011
94 Cerebelum_Crus2_R 9012
95 Cerebelum_3_L 9021
96 Cerebelum_3_R 9022
97 Cerebelum_4_5_L 9031
98 Cerebelum_4_5_R 9032
99 Cerebelum_6_L 9041
100 Cerebelum_6_R 9042
101 Cerebelum_7b_L 9051
102 Cerebelum_7b_R 9052
103 Cerebelum_8_L 9061
104 Cerebelum_8_R 9062
105 Cerebelum_9_L 9071
106 Cerebelum_9_R 9072
107 Cerebelum_10_L 9081
108 Cerebelum_10_R 9082
109 Vermis_1_2 9100
110 Vermis_3 9110
111 Vermis_4_5 9120
112 Vermis_6 9130
113 Vermis_7 9140
114 Vermis_8 9150
115 Vermis_9 9160
116 Vermis_10 9170

两个小问题

Fri, 08/21/2009 - 22:01 — xixiangchenjun

在用dparsf时发现了两个小问题，请尽快解决！
1 在更改FWHM时（如将4 4 4改为8 8 8）会出现错误提示，具体见下：
Undefined function or variable 'VoxSize'.

Error in ==> DPARSF>editFWHM_Callback at 425
handles.Cfg.Smooth.FWHM =eval(['[',VoxSize,']']);

Error in ==> gui_mainfcn at 96
feval(varargin{:});

Error in ==> DPARSF at 31
gui_mainfcn(gui_State, varargin{:});

??? Error while evaluating uicontrol Callba 不过这个问题已经由朱老师组的孟同学解决掉了。
2 不能自动删除前十个时间点的数据，而且和右侧输入的时间点数不能匹配。比如如果你有200个时间点，如果你选择了去除前十个时间点这一项，你必须在time points处填210，不然就运行不下去。而且在删除前10个时间点时软件会误将前20个时间点的img文件删掉，而保留hdr文件，导致软件也不能正常运行下去，只能手动一个一个删除前十个时间点比较麻烦！
希望能尽快解决！谢谢。

Re

Tue, 09/01/2009 - 11:04 — YAN Chao-Gan

Thanks for your report!
Please download the latest release.
Best wishes!

Comment viewing options