# fMRI Lab - Pre-processing and GLM modeling

This is an example of blocked fMRI data acquired on a modified 2T Siemens Magnetom Vision System. There are 96 functional scans (BOLD/EPI images; fM00223\_004 – fM00223\_009 and one structural T1-weighted image (sM00223\_002).

The blocked design task is auditory stimulation (two-syllable words presented at a rate of 1 per second) alternating with periods of silence/rest.

# The BOLD/EPI parameters are:

64 contiguous slices (64x64x64) Voxel size: 3mm x 3mm x 3mm

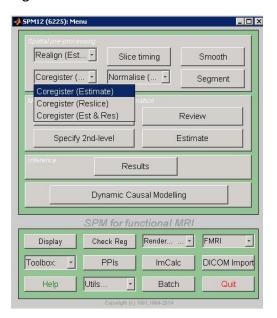
TR =7s

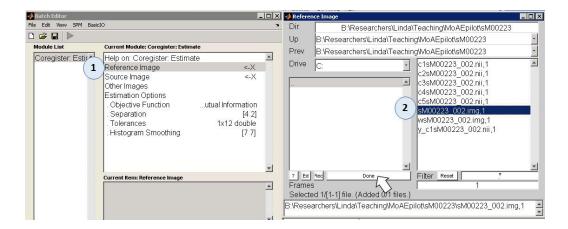
## In this lab, you will:

- 1) normalize the structural and functional data
- 2) smooth the functional data
  - You can play around with different smoothing kernels or examine the difference between smoothing and not smoothing the data
- 3) specify a design matrix (model)
- 4) estimate the model
- 5) inspect the results
- 6) specify contrasts.

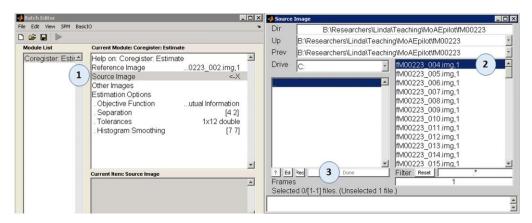
### \*\*\*\*\*

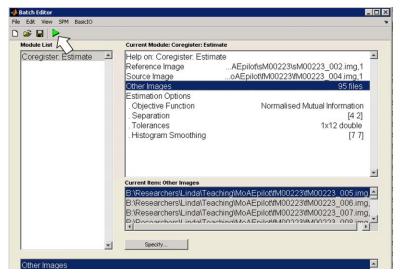
- I. Launch SPM12 from Matlab
- II. Co-register structural and functional data:





- A. For the "Reference Image," select sM00223\_002.img and then click "Done"
- B. For the "Source Image," select the first functional image in the functional image directory: "fM00223 004.img" and then click "Done"



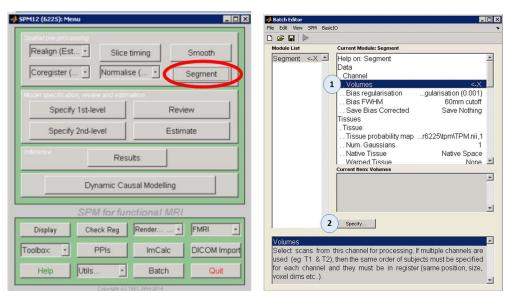


When all the files have been specified in the Batch Editor, click on the green arrow.

When the co-registration is done, you will see this in the SPM Graphics window:

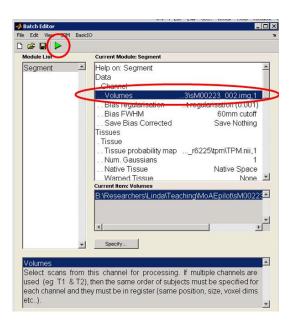
# Normalised Mutual Information Coregistration X1 = 3.000°X +0.018°Y +0.017°Z +28.792 Y1 = -0.018°X +3.000°Y +0.042°Z +32.813 Z1 = -0.006°X -0.014°Y +1.000°Z -8.475 Original Joint Histogram Final Joint Histogram Sum00223\_002 img JeM00223\_002 img

# II. Segment the structural data

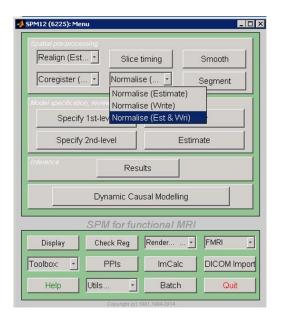


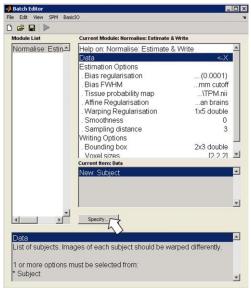
- 1) Click on Volumes
- 2) Click Specify
- 3) Navigate to the sM00223 directory and highlight "M00223\_002.img"; then click "Done"

- 4) After you see the structural image in the Volumes field, click the green button to segment. This will take a few of minutes.
- 5) When the segmentation is complete, in the sM00223 directory, you should see 6 new files: c1sM00223\_002, c2sM00223\_002, c3sM00223\_002, c4\_sM00223\_002, c5sM00223\_002, and sM00223\_002\_seg8.

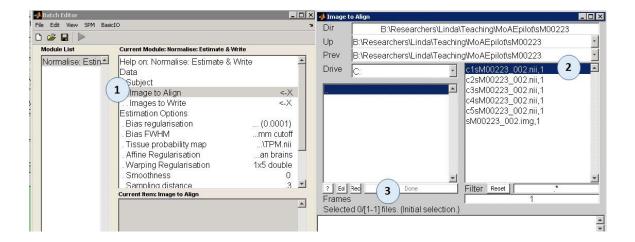


### III. Normalize the structural data:

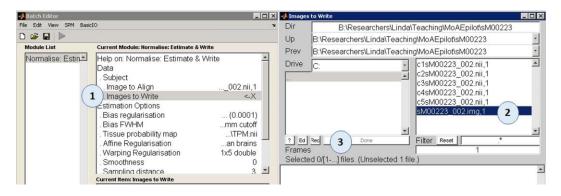




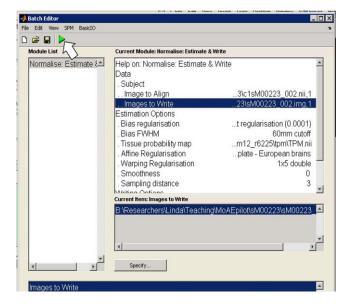
1) After clicking "Specify", highlight "Image to Align" and select c1sM00223 002.nii (click Done).



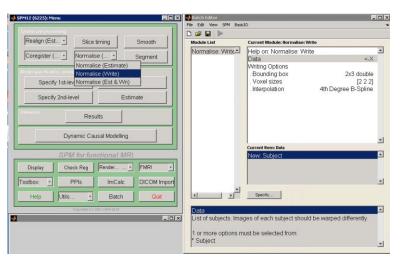
2) Highlight "Images to Write"; select "sM00223\_002.img"; click "Done":

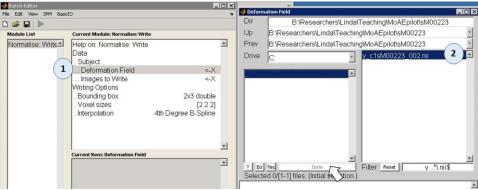


- 3) After selecting both files, click on the green arrow to Normalize. This step will take several minutes.
  - a. When this step is finished, there will be 3 new files in the sM00223 folder: wsM00223\_002.img, wsM00223\_002.hdr, (normalized structural image) and y\_cs1sM00223\_002 (deformation field)

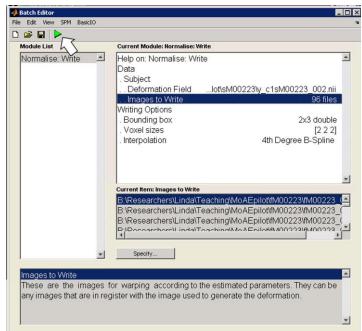


- IV. Apply the deformation field to the co-registered functional data:
  - 1) choose "Normalize (Write)
  - 2) click "Data" and "specify:



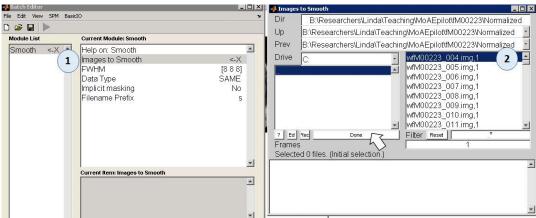


- 3) For "Deformation Field," select "y\_c1sM00223\_002.nii" in the structural folder and click "Done"
- 4) For "Images to write," select all the functional images in the "fM00223" folder then click the green arrow
- 5) After this step is complete, there will be 192 new functional images with the prefix "w" (e.g., wfM00223 004).
- 6) Move these 'normalized' functional images into a separate folder called Normalized within the "fM00223" folder



### V. Smooth the normalized functional data.

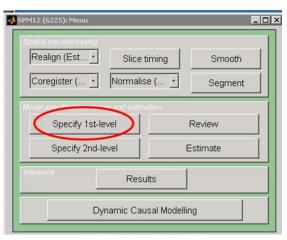


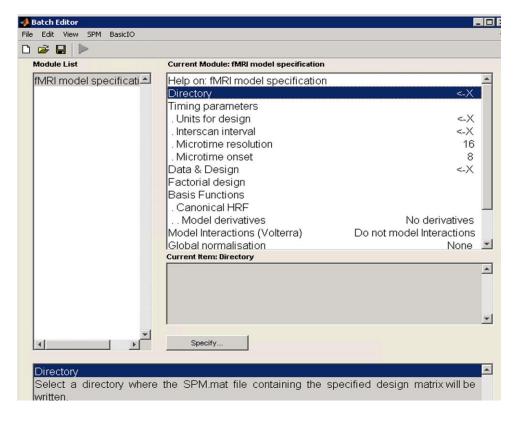


- 1) For "Images to Smooth," select all the normalized functional scans and then click done.
- 2) Then click the green arrow.
  - a. You can leave the FWHM at the default 8,8,8 for now. If there is time, you can play around with different smoothing kernels or not smoothing the functional data at all.
- 3) When this step is finished, you should have 192 new files with the prefix "s" in the Normalized folder (e.g., swfM00223\_004).
- 4) Move these smoothed, normalized functional images into a separate folder called Smooth888 within the "fM00223" folder
- 5) Because there were no "dummy" lead in scans in the experiment, we can remove the first few scans (i.e., you can move the first 6 scans into a separate folder so the experiment starts with a sound block).

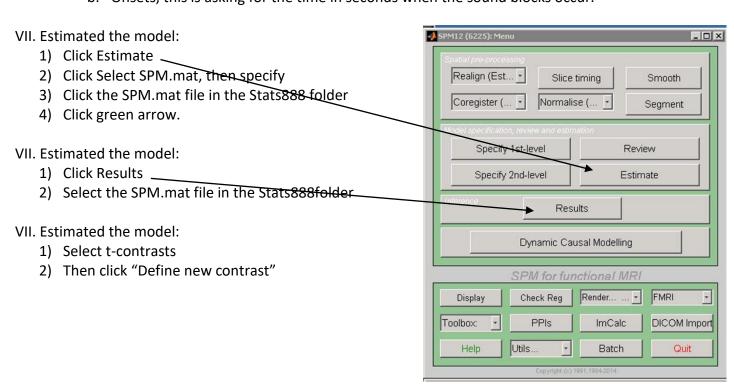
### VI. Specify the design matrix:

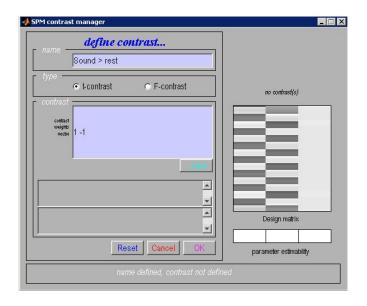
- Within the MoAEpilot directory, make a directory called "Stats888" to put the files generated from the 1<sup>st</sup> level analysis.
- 2) Click on "Specify 1st-level"

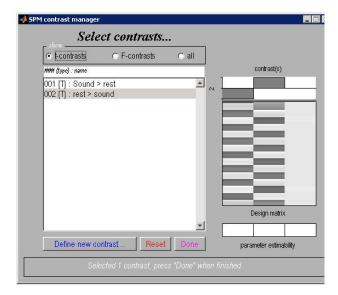




- 3) For Directory, select the Stats888 folder you just created
- 4) Units for design, select seconds
- 5) Interscan interval, 7
- 6) For Data & Design, select New Subject/Session
- 7) For Scans, select all smoothed, normalized, functional scans
- 8) Click on Conditions and select "New: Condition"
  - Name, call first condition something like "Sound"
  - b. Onsets, this is asking for the time in seconds when the sound blocks occur.





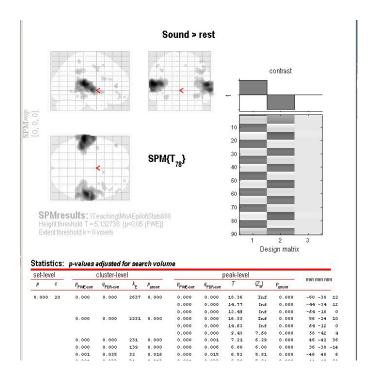


Contrast 1: Sound > Rest, specify 1 -1

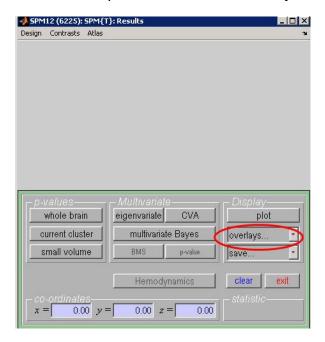
Contrast 2: Rest > sound, specify -1 1

### To view results:

- 1) Click results
- 2) Click SPM.mat file, done
- 3) Pick contrast to look at, select 001{T} Sound > rest, then Done
- 4) Apply masking: none
- 5) p value adjustment to control: FEW
- 6) p value (PWE): 0.05
- 7) & extent threshold [voxels]: 0
- 8) You should see Glass Brain rendition of activations



9) You can also over lay the activations on the subject's structural image:



- 10) Can overlay activations on slices or section (this option allows you to click around a 3D volume)
  - a. Select normalize structural image for the overlay.

# **Auditory Experiment Timing Parameters**

fM00222 004	4	
fM00223_004	1 Doct	
fM00223_005	Rest	
fM00223_006	(discard)	
fM00223_007		
fM00223_008		
fM00223_009	2	seconds
fM00223_010	2 Sound	1-7
fM00223_011	Sound	8-14
fM00223_012		15-21
fM00223_013		22-28
fM00223_014		29-35
fM00223_015	2	36-42
fM00223_016	3	43-49
fM00223_017	Rest	50-56
fM00223_018		57-63
fM00223_019		64-70
fM00223_020		71-77
fM00223_021	Λ	78-84
fM00223_022	4 Sound	85-91
fM00223_023	Sound	92-98
fM00223_024		99-105 106-112
fM00223_025		113-119
fM00223_026		
fM00223_027	5	120-126 127-133
fM00223_028 fM00223_029	Rest	134-140
fM00223_029	Nest	141-147
fM00223_030		148-154
fM00223_031		155-161
fM00223_032		162-168
fM00223_033	6	169-175
fM00223_034	Sound	176-182
fM00223_035	Journa	183-189
fM00223_030		190-196
fM00223_037		197-203
fM00223_030		204-210
fM00223_039	7	211-217
fM00223_040	Rest	218-224
fM00223_041		225-231
fM00223_042		232-238
fM00223_044		239-245
fM00223_011		246-252
fM00223_015	8	253-259
fM00223_040	Sound	260-266
fM00223_047		267-273
fM00223_040		274-280
fM00223_043		281-287
114100223_030		201-201

# Onsets

rest 43 127 211 295 379 463 547 sound 1 85 169 253 337 421 505 589

fM00223_051         288-294           fM00223_052         9         295-301           fM00223_054         302-308           fM00223_055         316-322           fM00223_056         323-329           fM00223_057         330-336           fM00223_058         10         337-343           fM00223_059         Sound         344-350           fM00223_061         358-364           fM00223_062         365-371           fM00223_063         372-378           fM00223_065         Rest         386-392           fM00223_066         393-399           fM00223_067         400-406           fM00223_068         407-413           fM00223_069         414-420           fM00223_070         12         421-427           fM00223_071         Sound         428-434           fM00223_072         435-441         449-455           fM00223_073         442-448         470-476           fM00223_075         Rest         470-476           fM00223_076         Rest         470-476           fM00223_081         498-504           fM00223_082         14         505-511           fM00223_088         5	(1,400,222, 054		200 204
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fM00223_063         372-378           fM00223_064         11         379-385           fM00223_065         Rest         386-392           fM00223_066         393-399           fM00223_068         407-413           fM00223_069         414-420           fM00223_070         12         421-427           fM00223_071         Sound         428-434           fM00223_073         442-448         449-455           fM00223_075         456-462           fM00223_075         456-462           fM00223_076         13         463-469           fM00223_078         477-483           fM00223_079         484-490           fM00223_080         491-497           fM00223_081         498-504           fM00223_083         512-518           fM00223_084         519-525           fM00223_085         526-532           fM00223_086         533-539           fM00223_087         540-546           fM00223_088         15         547-553           fM00223_090         561-567         568-574           fM00223_091         568-574         568-574           fM00223_095         50-602         603-609     <			
fM00223_064         11         379-385           fM00223_065         Rest         386-392           fM00223_066         393-399           fM00223_068         407-413           fM00223_069         414-420           fM00223_070         12         421-427           fM00223_071         Sound         428-434           fM00223_072         435-441         449-455           fM00223_073         442-448           fM00223_075         456-462           fM00223_076         13         463-469           fM00223_078         477-483           fM00223_079         484-490           fM00223_080         491-497           fM00223_081         505-511           fM00223_083         519-525           fM00223_084         519-525           fM00223_085         526-532           fM00223_086         533-539           fM00223_087         540-546           fM00223_089         Rest         554-560           fM00223_090         561-567         568-574           fM00223_091         568-574         568-574           fM00223_093         582-581           fM00223_094         16         589-595 <td>_</td> <td></td> <td></td>	_		
fM00223_065         Rest         386-392           fM00223_066         393-399           fM00223_067         400-406           fM00223_069         414-420           fM00223_070         12         421-427           fM00223_071         Sound         428-434           fM00223_072         435-441         449-455           fM00223_075         456-462           fM00223_075         456-462           fM00223_076         13         463-469           fM00223_077         Rest         470-476           fM00223_078         477-483         498-490           fM00223_080         491-497           fM00223_081         498-504           fM00223_082         14         505-511           fM00223_083         519-525           fM00223_084         519-525           fM00223_085         526-532           fM00223_086         533-539           fM00223_087         540-546           fM00223_089         Rest         554-560           fM00223_090         561-567           fM00223_091         568-574           fM00223_093         582-581           fM00223_095         50-602			
fM00223_066       393-399         fM00223_067       400-406         fM00223_068       407-413         fM00223_069       414-420         fM00223_070       12       421-427         fM00223_071       Sound       428-434         fM00223_072       435-441       449-455         fM00223_075       456-462         fM00223_076       13       463-469         fM00223_077       Rest       470-476         fM00223_078       477-483       498-504         fM00223_080       491-497       498-504         fM00223_081       498-504       519-525         fM00223_083       50und       512-518         fM00223_084       519-525       526-532         fM00223_085       526-532       540-546         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_091       568-574       568-574         fM00223_092       575-581       580-595         fM00223_095       50und       596-602         fM00223_096       603-609       603-609         fM00223_098       610-616       610-616         fM00223_098       610-616	_		
fM00223_067       400-406         fM00223_068       407-413         fM00223_069       414-420         fM00223_070       12       421-427         fM00223_071       Sound       428-434         fM00223_073       442-448         fM00223_074       449-455         fM00223_075       456-462         fM00223_076       13       463-469         fM00223_077       Rest       470-476         fM00223_079       484-490       491-497         fM00223_080       491-497       498-504         fM00223_081       50und       512-511         fM00223_083       50und       512-518         fM00223_084       519-525       526-532         fM00223_085       526-532       540-546         fM00223_087       540-546       547-553         fM00223_088       15       547-553         fM00223_090       561-567       568-574         fM00223_091       568-574       568-574         fM00223_093       582-581       580-602         fM00223_095       50und       596-602         fM00223_096       603-609       603-609         fM00223_098       610-616	_	Rest	
fM00223_068       407-413         fM00223_069       414-420         fM00223_070       12       421-427         fM00223_071       Sound       428-434         fM00223_073       442-448         fM00223_074       449-455         fM00223_075       456-462         fM00223_076       13       463-469         fM00223_078       477-483         fM00223_079       484-490         fM00223_080       491-497         fM00223_081       498-504         fM00223_083       50und       512-518         fM00223_084       519-525         fM00223_085       526-532         fM00223_086       533-539         fM00223_087       540-546         fM00223_088       15       547-553         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       603-609         fM00223_098       610-616         fM00223_098       610-616	_		393-399
fM00223_069         414-420           fM00223_070         12         421-427           fM00223_072         435-441         435-441           fM00223_073         442-448         449-455           fM00223_075         456-462         470-476           fM00223_077         Rest         470-476           fM00223_079         484-490         491-497           fM00223_080         491-497         498-504           fM00223_081         Sound         512-518           fM00223_083         50und         512-518           fM00223_084         519-525         526-532           fM00223_085         526-532         540-546           fM00223_087         540-546         547-553           fM00223_088         15         547-553           fM00223_089         Rest         554-560           fM00223_090         561-567         568-574           fM00223_091         568-574         568-574           fM00223_093         582-588           fM00223_095         500-602         603-609           fM00223_096         603-609         603-609           fM00223_098         610-616         617-623			
fM00223_070         12         421-427           fM00223_071         Sound         428-434           fM00223_072         435-441           fM00223_073         442-448           fM00223_075         456-462           fM00223_076         13         463-469           fM00223_077         Rest         470-476           fM00223_078         477-483         477-483           fM00223_079         484-490         491-497           fM00223_081         498-504         498-504           fM00223_082         14         505-511           fM00223_083         519-525         526-532           fM00223_084         519-525         526-532           fM00223_085         526-532         540-546           fM00223_087         540-546         547-553           fM00223_088         15         547-553           fM00223_090         561-567         568-574           fM00223_092         575-581         568-574           fM00223_093         582-588           fM00223_095         50und         596-602           fM00223_096         603-609         603-609           fM00223_098         610-616         610-616	fM00223_068		407-413
fM00223_071         Sound         428-434           fM00223_072         435-441           fM00223_073         442-448           fM00223_075         456-462           fM00223_076         13         463-469           fM00223_077         Rest         470-476           fM00223_079         484-490         491-497           fM00223_080         491-497         498-504           fM00223_081         498-504         505-511           fM00223_083         5ound         512-518           fM00223_084         519-525         526-532           fM00223_085         526-532         540-546           fM00223_087         540-546         547-553           fM00223_088         15         547-553           fM00223_090         561-567         568-574           fM00223_091         568-574         568-574           fM00223_093         582-588           fM00223_094         16         589-595           fM00223_095         50und         596-602           fM00223_097         610-616         603-609           fM00223_098         617-623			414-420
fM00223_072       435-441         fM00223_073       442-448         fM00223_075       456-462         fM00223_076       13       463-469         fM00223_077       Rest       470-476         fM00223_079       484-490         fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       5ound       512-518         fM00223_085       526-532       526-532         fM00223_086       533-539       540-546         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_092       575-581       580-595         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       603-609       603-609         fM00223_098       610-616       617-623	_		421-427
fM00223_073       442-448         fM00223_074       449-455         fM00223_075       456-462         fM00223_076       13       463-469         fM00223_078       477-483         fM00223_079       484-490         fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       5ound       512-518         fM00223_084       519-525       526-532         fM00223_085       526-532       533-539         fM00223_086       533-539       540-546         fM00223_087       540-546       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_091       568-574       589-595         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       50und       596-602         fM00223_097       610-616       603-609         fM00223_098       617-623	fM00223_071	Sound	
fM00223_074       449-455         fM00223_075       456-462         fM00223_076       13       463-469         fM00223_077       Rest       470-476         fM00223_078       477-483         fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       5ound       512-518         fM00223_084       519-525       526-532         fM00223_085       526-532       540-546         fM00223_087       540-546       547-553         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_092       575-581       588-588         fM00223_093       582-588       596-602         fM00223_095       5ound       596-602         fM00223_096       603-609       603-609         fM00223_098       610-616       617-623	fM00223_072		435-441
fM00223_075         456-462           fM00223_076         13         463-469           fM00223_077         Rest         470-476           fM00223_078         477-483           fM00223_079         484-490           fM00223_080         491-497           fM00223_081         498-504           fM00223_082         14         505-511           fM00223_083         Sound         512-518           fM00223_084         519-525         526-532           fM00223_085         526-532         540-546           fM00223_087         540-546         547-553           fM00223_088         15         547-553           fM00223_089         Rest         554-560           fM00223_090         561-567         568-574           fM00223_091         568-574         575-581           fM00223_093         582-588           fM00223_094         16         589-595           fM00223_096         603-609           fM00223_097         610-616           fM00223_098         617-623	fM00223_073		442-448
fM00223_076         13         463-469           fM00223_077         Rest         470-476           fM00223_079         484-490         491-497           fM00223_080         491-497         498-504           fM00223_081         498-504         505-511           fM00223_083         50und         512-518           fM00223_084         519-525         526-532           fM00223_085         526-532         540-546           fM00223_087         540-546         547-553           fM00223_088         15         547-553           fM00223_089         Rest         554-560           fM00223_090         561-567         568-574           fM00223_091         568-574         589-595           fM00223_093         582-588         596-602           fM00223_095         50und         596-602           fM00223_096         603-609         603-609           fM00223_098         610-616         610-616           fM00223_098         617-623	_		449-455
fM00223_077       Rest       470-476         fM00223_078       477-483         fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       Sound       512-518         fM00223_084       519-525       526-532         fM00223_085       526-532       540-546         fM00223_087       540-546       547-553         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_091       568-574       589-595         fM00223_093       582-588       596-602         fM00223_095       50und       596-602         fM00223_096       603-609       603-609         fM00223_098       610-616       617-623			456-462
fM00223_078       477-483         fM00223_079       484-490         fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       Sound       512-518         fM00223_084       519-525       526-532         fM00223_085       533-539       540-546         fM00223_087       540-546       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_091       568-574       589-595         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_096       603-609         fM00223_097       610-616         fM00223_098       617-623	fM00223_076	13	
fM00223_079       484-490         fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       5ound       512-518         fM00223_085       526-532       526-532         fM00223_086       533-539       540-546         fM00223_087       540-546       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_091       568-574       589-595         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       5ound       596-602         fM00223_097       610-616       603-609         fM00223_098       617-623		Rest	470-476
fM00223_080       491-497         fM00223_081       498-504         fM00223_082       14       505-511         fM00223_083       Sound       512-518         fM00223_084       519-525       526-532         fM00223_086       533-539       540-546         fM00223_087       540-546       547-553         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567       568-574         fM00223_091       568-574       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       5ound       596-602         fM00223_097       610-616       603-609         fM00223_098       617-623	_		477-483
fM00223_081         498-504           fM00223_082         14         505-511           fM00223_083         5ound         512-518           fM00223_084         519-525         526-532           fM00223_085         526-532         540-546           fM00223_087         540-546         547-553           fM00223_089         Rest         554-560           fM00223_089         Rest         554-567           fM00223_091         568-574         568-574           fM00223_092         575-581         582-588           fM00223_093         582-588         596-602           fM00223_095         5ound         596-602           fM00223_097         610-616         603-609           fM00223_098         617-623	_		
fM00223_082         14         505-511           fM00223_083         Sound         512-518           fM00223_084         519-525           fM00223_085         526-532           fM00223_086         533-539           fM00223_087         540-546           fM00223_088         15         547-553           fM00223_089         Rest         554-560           fM00223_090         561-567         568-574           fM00223_091         568-574         589-581           fM00223_093         582-588         596-602           fM00223_095         Sound         596-602           fM00223_096         603-609         603-609           fM00223_098         610-616         617-623	fM00223_080		491-497
fM00223_083         Sound         512-518           fM00223_084         519-525           fM00223_085         526-532           fM00223_086         533-539           fM00223_087         540-546           fM00223_088         15         547-553           fM00223_089         Rest         554-560           fM00223_090         561-567         568-574           fM00223_091         568-574         575-581           fM00223_093         582-588           fM00223_094         16         589-595           fM00223_095         5ound         596-602           fM00223_096         603-609         610-616           fM00223_098         610-616         617-623	fM00223_081		
fM00223_084       519-525         fM00223_085       526-532         fM00223_086       533-539         fM00223_087       540-546         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       617-623	fM00223_082	14	505-511
fM00223_085       526-532         fM00223_086       533-539         fM00223_087       540-546         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       617-623	fM00223_083	Sound	512-518
fM00223_086       533-539         fM00223_087       540-546         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       610-616       617-623	fM00223_084		
fM00223_087       540-546         fM00223_088       15       547-553         fM00223_089       Rest       554-560         fM00223_090       561-567         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609         fM00223_098       610-616         fM00223_098       617-623	fM00223_085		
fM00223_088         15         547-553           fM00223_089         Rest         554-560           fM00223_090         561-567           fM00223_091         568-574           fM00223_092         575-581           fM00223_093         582-588           fM00223_094         16         589-595           fM00223_095         Sound         596-602           fM00223_096         603-609         610-616           fM00223_098         617-623	_		533-539
fM00223_089       Rest       554-560         fM00223_090       561-567         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609         fM00223_098       610-616         fM00223_098       617-623	fM00223_087		540-546
fM00223_090       561-567         fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       617-623	<del>-</del>	15	547-553
fM00223_091       568-574         fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       617-623	fM00223_089	Rest	
fM00223_092       575-581         fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       617-623	fM00223_090		561-567
fM00223_093       582-588         fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609       610-616         fM00223_098       617-623	fM00223_091		568-574
fM00223_094       16       589-595         fM00223_095       Sound       596-602         fM00223_096       603-609         fM00223_097       610-616         fM00223_098       617-623	fM00223_092		575-581
fM00223_095	fM00223_093		582-588
fM00223_096 603-609 fM00223_097 610-616 fM00223_098 617-623	fM00223_094	16	589-595
fM00223_097 610-616 fM00223_098 617-623	fM00223_095	Sound	596-602
fM00223_098 617-623	fM00223_096		603-609
_	fM00223_097		610-616
fM00223_099 624-630	fM00223_098		617-623
	fM00223_099		624-630