Table 200 - table with traveltime errors

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Define working folder, add links to Library and SeisLab

```
clear; close all; clc;
mlibfolder = '/home/zmaw/u250128/Desktop/MLIB';
path(path, mlibfolder);
addmypath;
```

Introduction

```
% Note:
% Accuracy of traveltime 10e-12
% Accuracy of attributes 10e-10

for model = [11 12 13 21 22 23 31 32 33 41 42 43 51 52 53 61 62 63 ]

%for model = 21:21
    acquisition = 3;

    % Get model parameters
    Get_model_parameters;

    % Get acquisition geometry
    Get_model_acquisition_geometry;

    % Load stacking parameters

    CRS_param = MLD([mlibfolder '/CRS/models/model_'
 num2str(model) '_CRS_param.mat']);

    X0 = CRS_param.x0;
    t0 = CRS_param.t0;
    v0 = CRS_param.v0;
    w3 = CRS_param.w;
    M3 = CRS_param.M;
    N3 = CRS_param.N;

    % take (x,y) components
     % (reality)
```

```
    w = w3(1:2, 1);
    N = N3(1:2, 1:2);
    M = M3(1:2, 1:2);

   % Download exact traveltimes
   tti_ex = MLD([mlibfolder '/CRS/models/model_'
num2str(model) '_traveltimes_for_acq_' num2str(acquisition) '.mat']);
```

Traveltime approximations

```
    HH = (Xg(1:2, :) - Xs(1:2,:))/2;
    MM = (Xg(1:2, :) + Xs(1:2,:))/2;
    MM(1,:) = MM(1,:) - X0(1);
    MM(2,:) = MM(2,:) - X0(2);

    fold = size(HH,2);

    %
    tti_crs  = real(Get_traveltime_3D_CRS (MM, HH, t0, w, M, N));
    tti_dsr  = real(Get_traveltime_3D_DSR (MM, HH, t0, w, M, N));
    tti_ncrs = real(Get_traveltime_3D_nCRS(MM, HH, t0, w, M, N));
    tti_icrs_par_LIA = real(Get_traveltime_3D_iCRS_par_LIA(MM, HH,
t0, w, M, N, 4));
    tti_icrs_el_LIA = real(Get_traveltime_3D_iCRS_el_LIA(MM, HH, t0,
v0, w, M, N, 4));
    tti_icrs_el_TIA = real(Get_traveltime_3D_iCRS_el_TIA(MM, HH, t0,
v0, w, M, N, 4));

    err_rms_crs  = sqrt(sum(((tti_crs  - tti_ex)./tti_ex).^2)/
fold)*100;
    err_rms_dsr  = sqrt(sum(((tti_dsr  - tti_ex)./tti_ex).^2)/
fold)*100;
    err_rms_ncrs = sqrt(sum(((tti_ncrs - tti_ex)./tti_ex).^2)/
fold)*100;
    err_rms_icrs_par_LIA = sqrt(sum(((tti_icrs_par_LIA(4,:) -
tti_ex)./tti_ex).^2)/fold)*100;
    err_rms_icrs_el_LIA  = sqrt(sum(((tti_icrs_el_LIA(4,:)  -
tti_ex)./tti_ex).^2)/fold)*100;
    err_rms_icrs_el_TIA  = sqrt(sum(((tti_icrs_el_TIA(4,:)  -
tti_ex)./tti_ex).^2)/fold)*100;

    disp(['Model #' num2str(model)]);
    disp('Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-
CRS_el_TIA');
    err = [err_rms_crs, err_rms_dsr, err_rms_ncrs,
err_rms_icrs_par_LIA, err_rms_icrs_el_LIA, err_rms_icrs_el_TIA   ]
```

```
Model #11
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.0000    0.0000    0.0000    0.0003    0.0003    0.0022
```

```
Model #12
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.0584    0.0584    0.0584    0.0586    0.0586   17.0288


Model #13
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.0500    0.0500    0.0500    0.0502    0.0502    1.3863


Model #21
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.0000    0.2073    0.0000    0.0010    0.0010    3.7814


Model #22
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.1841    0.2319    0.1911    0.1892    0.1892    2.2200


Model #23
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.1826    0.2250    0.1904    0.1883    0.1883       NaN


Model #31
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.8782    0.0046    0.0024    0.0006    0.0001    0.0001


Model #32
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =
```

```
    0.9083    0.0906    0.0895    0.0919    0.0917    0.0917


Model #33
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.9054    0.0846    0.0832    0.0856    0.0853    0.0853


Model #41
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.2411    0.0867    0.0429    0.0072    0.0002    0.0004


Model #42
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.2754    0.1589    0.0977    0.1078    0.1084    0.1087


Model #43
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.2729    0.1534    0.0927    0.1037    0.1044    0.1046


Model #51
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.2071    0.1183    0.0614    0.0216    0.0220    0.3389


Model #52
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.1673    0.1231    0.0925    0.0952    0.0958    0.6212


Model #53
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =
```

```
    0.1627    0.1169    0.0865    0.0896    0.0902    0.6191


Model #61
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.1919    0.0674    0.0169    0.0492    0.0484    0.0479


Model #62
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.2237    0.1455    0.1079    0.1279    0.1279    0.1301


Model #63
Err: CRS, DSR, nCRS, iCRS_par_LIA, i-CRS_el_LIA, i-CRS_el_TIA

err =

    0.2233    0.1441    0.1075    0.1280    0.1280    0.1301


end
```

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