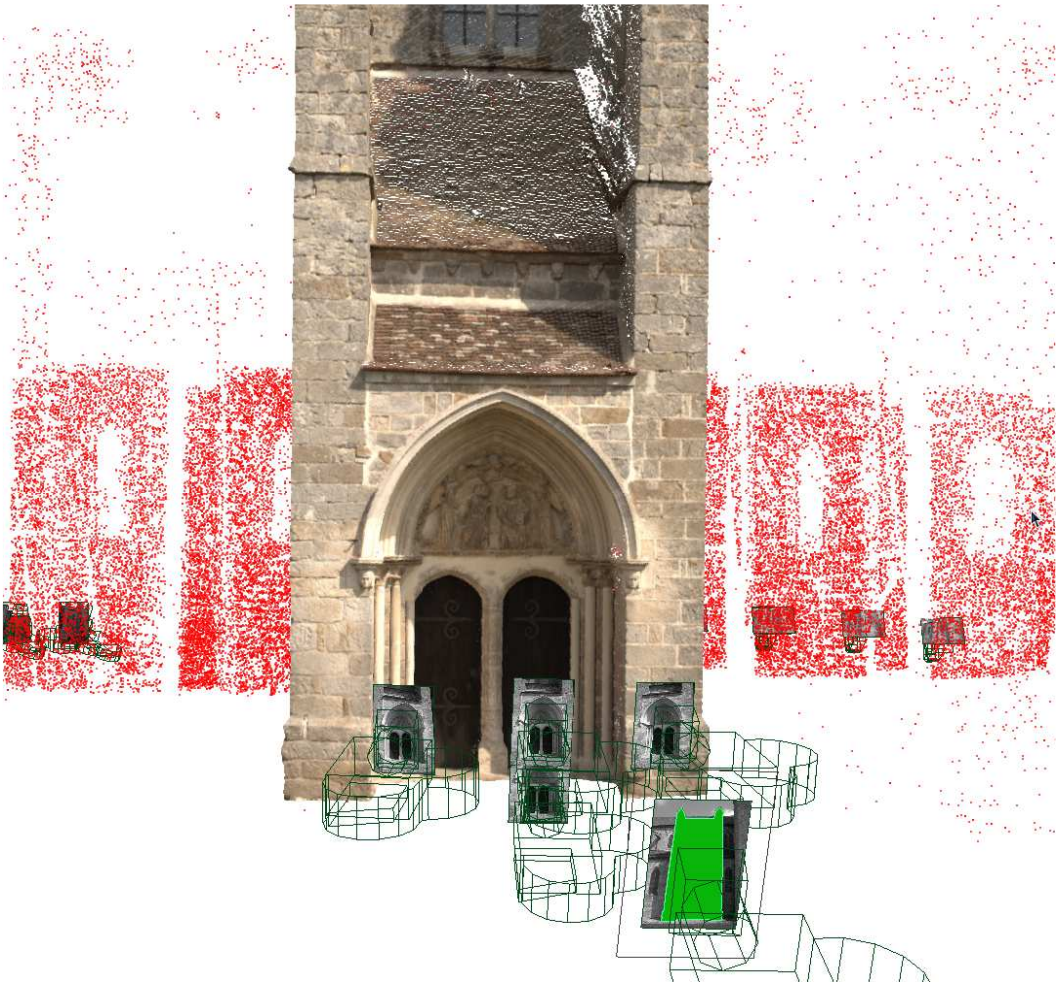
ECOLE NATIONALE
DES SCIENCES
GEOGRAPHIQUES

UMR 694
MAP
Gamsau

CODES SOURCES DE PHOTOCLOUD ET SIFT3D



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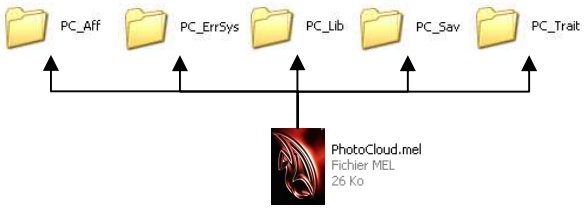
I. PHOTOCOUD

1. Structure Générale

Dans le dossier d'installation de PhotoCloud sont placés différents dossiers qui regroupent des scripts MEL classés par thématiques :



Nous présentons le code source de PhotoCloud.mel puis nous présentons les codes sources par dossier

2. PhotoCloud.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
////  Auteur :              Aymeric GODET
////
////  Date :                10/09/10
////
////  Presentation :        Creation de l'interface graphique de PhotoCloud
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////

// Les sources relatif à l'affichage
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Aff/anc2.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Aff/anc6.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Aff/affstep.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Aff/camera.mel";

// Les sources relatifs à la sauvegarde du chantier
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Sav/stepFile.mel";

// Les sources relatifs aux librairies utilisées
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Lib/xml_lib.mel";


// Les sources relatifs aux Traitements des données
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/TraitImg.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/TraitPastis.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/TraitApero.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/TraitMICMAC.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/PbApero.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/Masq.mel";
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_Trait/TreeCor.mel";

//  Les sources relatifs aux problème système
source "/home/aymeric/Bureau/NUBES/PhotoCloud/PC_ErrSys/zombies.mel";


// Variable globales de PhotoCloud :

global int $step = 0;                  // Determine a quelle étape du traitement nous nous trouvons afin de
gerer l'affichage
```

```
// Paramètres du chantier :

// Parametres generaux

global string $WPath;                // Chemin d'accée au image brute
global int $WProc = 8;               // Nombre de Processeur pouvant être utilisé pour les calculs
global string $pathproj;             // Chemin du projet NUBES + /Photocloud
global string $pathprojroot;         // Chemin du projet NUBES

// Images :
global string $raw;                  // Extension des images RAW
global string $imgH;                 // Hauteur des images
global string $imgW;                 // Largeur des images
global string $ltifnb[];             // Liste des images du chantier
global string $lfcam[];              // Liste des focales utilisees
global string $lfcamr[];             // Les residus lors de la calibration
global string $ImgDes;               //    Les    trois    caractères    de    description    de    l'image
(img|IMG|...)_0001.$raw
global string $Reso3Dsift;           // Le rapport d'echelle entre l'image pleine resolution et la seconde
version sous resolu de Pastis


global proc ChantierPath()
{
    global string $raw;
    global string $WPath;
    global string $ImgDes;

    string $ftest  = `fileDialog -m 0 -t "Dossier du chantier"`;
    $raw = endString($ftest,3);
    $WPath = pathpart($ftest)+"/";
    textField -edit -text $WPath  nc1_path;
    textField -edit -text $raw  nc1_raw;



    $sraw = "*."+$raw;

    $lraw = `getFileList -folder $WPath -filespec $sraw`;

    $simgdes = $lraw[0];
    $ImgDes = startString($simgdes,3);


    textScrollList -edit -ra nc2_srcl;
    textScrollList -edit -ra nc2_tral;

    for ( $i=0; $i < size($lraw); $i++ ) {
        textScrollList -edit -append $lraw[$i] nc2_srcl;
    }



}


global proc string pathpart( string $path )
{
    string $dir = match( "^.*/", $path );

    int $sz = size( $dir );

    if ( ( $sz > 1 ) && ( substring( $dir, $sz, $sz ) == "/" ) ) {
        $dir = substring( $dir, 1, ($sz - 1) );
    }
    return $dir;

}

global proc string filepart( string $path )
{
    string $filepart = match( "[^/\\]*$", $path );

    return $filepart;
}


if ( `window -exists Mainwin` ) {
    deleteUI Mainwin;
```

```
}


global proc PhotoCloud(string $path, string $NUBEScloud,string $NUBESimg)
{
    global int $step;
    global string $WPath;
    global int $WProc;
    global string $pathproj;
    global string $pathprojroot;
    global string $raw;
    global string $imgH;
    global string $imgW;
    global string $ltifnb[];
    global string $lfcam[];
    global string $lfcamr[];
    global string $Reso3Dsift;



    chdir "/home/aymeric/Documents";
    $pathprojroot = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$path+"/";
    $path = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$path+"/PhotoCloud/";

    system("mkdir "+$path);

    // Initialisation des tableaux

    string $initab[];
    $ltifnb = $initab;
    $lfcam = $initab;
    $pathproj = $path;

    window -wh 600 450 -s 0 -title "PhotoCloud" Mainwin;
    string $form0 = `formLayout -numberOfDivisions 100`;


    // Menu de presentation de PhotoCloud (Inusite dans NUBES)

    button -label "Nouveau chantier" -command "next(0)" nc0_NChant;
    button -label "Reprendre un chantier" -command "openChantier()" nc0_RChant;
    button -label "Suivant -->" -visible 0 -command "next(1)" nc_suiv;
    button -label "<-- Precedent" -visible 0 -command "next(-1)" nc_prec;
    textScrollList -w 150 -h 270 -ams 1 -visible 0 listnumimg;

    // NC1  Création d'un nouveau chantier

    text -al "left" -label "Dossier  " -visible 0 nc1_dos;
    textField -text "Chemin non specifie !!" -w 250 -visible 0 nc1_path;
    button -label "Parcourir..." -visible 0 -command "ChantierPath()" nc1_par;
    text -al "left" -label "Format image  " -visible 0 nc1_traw;
    textField -text "..." -visible 0 nc1_raw;
    optionMenuGrp -l "Nombre de processeur" -visible 0 nc1_nbproc;
    menuItem -label "1";
    menuItem -label "2";
    menuItem -label "3";
    menuItem -label "4";
    menuItem -label "5";
    menuItem -label "6";
    menuItem -label "7";
    menuItem -label "8";

    optionMenuGrp -edit -sl 8 nc1_nbproc;

    // NC2  Prétraitements

    text -al "left" -label "Pretraitements :" -font "boldLabelFont" -visible 0 nc2_tit;
    text -al "left" -label "Nous allons generer les images du chantier au format TIF. Dans la
colonne 'Source' sont\nlistees les images disponnibles non utilisees." -visible 0 nc2_des;
    text -al "left" -label "Images sources :" -visible 0 nc2_src;
    textScrollList -w 150 -h 200 -ams 1 -visible 0 nc2_srcl;
    button -label "=>" -visible 0 -command "anc2_raw2nball()" nc2_s2nball;
    button -label "->" -visible 0 -command "anc2_raw2nbsel()" nc2_s2nbsel;
    button -label "<-" -visible 0 -command "anc2_nb2rawsel()" nc2_nb2ssel;
    button -label "<=" -visible 0 -command "anc2_nb2rawall()" nc2_nb2sall;

    text -al "left" -label "Images a traiter :" -visible 0 nc2_tra;
    textScrollList -w 150 -h 200 -ams 1 -visible 0 nc2_tral;

    // NC3  Avancement des Prétraitements

    text -al "left" -label "Avancement des pretraitements :" -font "boldLabelFont" -visible 0
nc3_titp;
```

```
    text -al "left" -label "Detection des focales utilisees :" -visible 0 -w 350 nc3_tit1;
    text -al "left" -label "Chargement des donnees :" -visible 0 nc3_tit2;
    progressBar -maxValue 10 -width 400 -visible 0 nc3_pb1;
    text -al "left" -label "  0%" -w 50 -visible 0 nc3_av1;
    text -al "left" -label "Generation des images TIF :" -visible 0 nc3_tit3;
    progressBar -maxValue 10 -width 400 -visible 0 nc3_pb2;
    text -al "left" -label "  0%" -w 50 -visible 0 nc3_av2;

    text -al "left" -label "Generation des images JPG :" -visible 0 nc3_tit4;
    progressBar -maxValue 10 -width 400 -visible 0 nc3_pb3;
    text -al "left" -label "  0%" -w 50 -visible 0 nc3_av3;

    button -label "Annuler" -visible 0 -enable 1 nc3_an;
    button -label "Continuer" -visible 0 -enable 0 nc3_ct;


    // NC4  Paramétrage de PASTIS

    text -al "left" -label "Calculs des points SIFT :" -font "boldLabelFont" -visible 0
nc4_titp;
    text -al "left" -label "Nous allons detecter lors de cette etape des points
caracteristiques SIFT des images.Ces \nderniers vont permettre la mise en corespondance des
images du chantier.Pour ce faire\n les calculs seront effectuer en deux temps avec des
resolutions differentes." -visible 0 nc4_des;
    optionMenuGrp -l "Taille image de la passe 1 : " -visible 0 nc4_tip1;
    menuItem -label "200";
    menuItem -label "300";
    menuItem -label "400";
    menuItem -label "500";

    optionMenuGrp -edit -sl 2 nc4_tip1;
    text -al "left" -label "Px" -w 20 -visible 0 nc4_px1;

    text  -label "Format du capteur :" -visible 0 nc4_form;
    textField  -w 50 -text "24" -visible 0 nc4_24;
    text -w 10 -label " X " -visible 0 nc4_x;
    textField  -text "36" -w 50 -visible 0 nc4_36;
    text -al "left" -label " mm " -visible 0 nc4_mm;

    optionMenuGrp -l "Taille image de la passe 2 : " -visible 0 nc4_tip2;
    menuItem -label "1300";
    menuItem -label "1400";
    menuItem -label "1500";
    menuItem -label "1600";
    menuItem -label "1700";

    optionMenuGrp -edit -sl 3 nc4_tip2;
    text -al "left" -label "Px" -visible 0 nc4_px2;

    // NC5  Avancement de Pastis

    text -al "left" -label "Avancement de Pastis :" -font "boldLabelFont" -visible 0 nc5_titp;

    text -al "left" -label "Premiere passe :" -font "boldLabelFont" -visible 0 nc5_titp1;
    text -al "left" -label "Generation des imagettes :" -visible 0 nc5_stit1;
    progressBar -maxValue 10 -width 400 -visible 0 nc5_pb1;
    text -al "left" -label "  0%" -w 50 -visible 0 nc5_av1;
    text -al "left" -label "Calculs des points homologues :" -visible 0 nc5_stit2;
    progressBar -maxValue 10 -width 400 -visible 0 nc5_pb2;
    text -al "left" -label "  0%" -w 50 -visible 0 nc5_av2;

    text -al "left" -label "Seconde passe :" -font "boldLabelFont" -visible 0 nc5_titp2;
    text -al "left" -label "Generation des imagettes :" -visible 0 nc5_stit3;
    progressBar -maxValue 10 -width 400 -visible 0 nc5_pb3;
    text -al "left" -label "  0%" -w 50 -visible 0 nc5_av3;
    text -al "left" -label "Calculs des points homologues :" -visible 0 nc5_stit4;
    progressBar -maxValue 10 -width 400 -visible 0 nc5_pb4;
    text -al "left" -label "  0%" -w 50 -visible 0 nc5_av4;

    button -label "Annuler" -visible 0 -enable 1 nc5_an;
    button -label "Continuer" -visible 0 -enable 0 -command"next(1)" nc5_ct;


    // NC6              Paramétrage de APERO

    text -al "left" -label "Parametrage de APERO :" -font "boldLabelFont" -visible 0 nc6_titp;
    text -al "left" -label "Les images traitees doivent maintenant etre triees par fonction
d'utilisation :" -visible 0 nc6_des;
    text -al "left" -label "- Images de calibration :  elles sont utilisees afin de calibrer
les cameras."-visible 0 nc6_des1;
    text -al "left" -label "- Images globales :          elles servent a decrire l'ensemble du
chantier."-visible 0 nc6_des2;
    text -al "left" -label "- Images locales :            elles seront utilisees pour generer
```

```
les nuages 3D dense."-visible 0 nc6_des3;

    image -image "/home/aymeric/Bureau/NUBES/PhotoCloud/icon.jpg" -w 120 -h 80 -visible 0
nc6_img;


    text -al "left" -label "Images :" -visible 0 nc6_src;
    textScrollList -w 150 -h 265 -ams 1 -visible 0 -sc "anc6_viewimg(0)" nc6_srcl;

    button -label "->" -visible 0 -command "anc6_tif2cal()" nc6_tif2cal;
    button -label "<-" -visible 0 -command "anc6_cal2tif()" nc6_cal2tif;

    text -al "left" -label "Calibrations :" -visible 0 nc6_cal;
    textScrollList -w 150 -h 70 -ams 1 -visible 0 -sc "anc6_viewimg(1)" nc6_call;

    button -label "->" -visible 0 -command "anc6_tif2glo()" nc6_tif2glo;
    button -label "<-" -visible 0 -command "anc6_glo2tif()" nc6_glo2tif;

    text -al "left" -label "Globales :" -w 100 -visible 0 nc6_glo;
    textScrollList -w 150 -h 70 -ams 1 -visible 0 -sc "anc6_viewimg(2)" nc6_glol;

    button -label "->" -visible 0 -command "anc6_tif2loc()" nc6_tif2loc;
    button -label "<-" -visible 0 -command "anc6_loc2tif()" nc6_loc2tif;

    text -al "left" -label "Correlation :" -visible 0 nc6_loc;
    textScrollList -w 150 -h 70 -ams 1 -visible 0 -sc "anc6_viewimg(3)" nc6_locl;

    text -al "left" -label "" -w 300 -visible 0 nc6_errcal;


    // NC7              Avancement de APERO

    text -al "left" -label "Avancement de APERO :" -font "boldLabelFont" -visible 0 nc7_titp;
    text -al "left" -label "Calibration des cameras :" -visible 0 nc7_des1;
    progressBar -maxValue 10 -width 400 -visible 0 nc7_pb1;
    text -al "left" -label "  0%" -w 50 -visible 0 nc7_av1;
    button -label "Parametres" -visible 0 -enable 0 -command "affstep7bis(1,0)" nc7_bparam1;
    text -al "left" -label "Residus : |" -w 250 -visible 0 nc7_rescal;
    button -label "Iterer" -visible 0 -enable 0 -command "ReitCal()" nc7_breit;
    button -label "Continuer" -visible 0 -enable 0 -command "AperoChant()" nc7_bstartChant;
    text -al "left" -label "Aerotriangulation global du chantier :" -visible 0 nc7_des2;
    button -label "Parametres" -visible 0 -enable 0 -command "affstep7bis(1,1)" nc7_bparam2;
    text -al "left" -label "Residu : " -w 250 -visible 0 nc7_reschant;

    $cmdsift = "siftCloud(\""+$NUBEScloud+"\",\""+$NUBESimg+"\")";


    button -label "Iterer" -visible 0 -enable 0 -command "ReitChant()" nc7_bchantreit;
    button -label "Continuer" -visible 0 -enable 0 -command $cmdsift nc7_b3Dsift;
    progressBar -maxValue 10 -width 400 -visible 0 nc7_pb2;
    text -al "left" -label "  0%" -w 50 -visible 0 nc7_av2;
    text -al "left" -label "Generation du nuage 3D de previsualisation :" -visible 0 nc7_des3;
    progressBar -maxValue 10 -width 400 -visible 0 nc7_pb3;
    text -al "left" -label "  0%" -w 50 -visible 0 nc7_av3;


    // NC7Bis           Retouche des paramètres de calcul

    text -al "left" -label "Analyse de la calibration" -w 300 -font "boldLabelFont" -visible 0
nc7b_titp;

    optionMenuGrp -l "Choix de la camera :" -w 210 -visible 0 -cc "affResSel()" nc7b_selCam;

    text -al "left" -label "Residu : " -visible 0 -w 150 nc7b_resCam;

    text -al "left" -label "Conseil :  " -visible 0 -w 600 nc7b_consCam;

    button -label "Journal" -visible 0 -command "Journal(0)" nc7b_bjour;
    button -label "Retour" -visible 0 -command "affstep7bis(0,0)" nc7b_bann;
    button -label "Recalculer" -visible 0 -command "ReCalib()" nc7b_brec;


    formLayout -edit

            -attachForm nc_suiv "top" 400
            -attachForm nc_suiv "left" 450
            -attachForm nc_prec "top" 400
            -attachForm nc_prec "left" 5

            // nc0
            -attachForm nc0_NChant "top" 60
            -attachForm nc0_NChant "left" 220
            -attachControl nc0_RChant  "top" 10 nc0_NChant
```

```
-attachForm nc0_RChant "left" 205

// nc1
-attachControl nc1_dos  "top" 10 nc2_des
-attachForm nc1_dos "left" 30
-attachControl nc1_path  "top" 10 nc2_des
-attachControl nc1_path "left" 60 nc1_dos
-attachControl nc1_par  "top" 10 nc2_des
-attachControl nc1_par "left" 5 nc1_path
-attachControl nc1_traw  "top" 10 nc1_path
-attachForm nc1_traw "left" 30
-attachControl nc1_raw  "top" 10 nc1_path
-attachControl nc1_raw "left" 26 nc1_traw
-attachControl nc1_nbproc  "top" 10 nc1_par
-attachForm nc1_nbproc "left" 300

// nc2 Prétraitement

-attachForm nc2_tit "left" 5
-attachForm nc2_tit "top" 10
-attachControl nc2_des  "top" 10 nc2_tit
-attachForm nc2_des "left" 5
-attachControl nc2_src  "top" 10 nc1_nbproc
-attachForm nc2_src "left" 100
-attachControl nc2_srcl  "top" 10 nc2_src
-attachForm nc2_srcl "left" 100
-attachControl nc2_s2nball  "top" 60 nc2_src
-attachControl nc2_s2nball "left" 5 nc2_srcl
-attachControl nc2_s2nbsel  "top" 10 nc2_s2nball
-attachControl nc2_s2nbsel "left" 5 nc2_srcl
-attachControl nc2_nb2ssel  "top" 10 nc2_s2nbsel
-attachControl nc2_nb2ssel "left" 5 nc2_srcl
-attachControl nc2_nb2sall  "top" 10 nc2_nb2ssel
-attachControl nc2_nb2sall "left" 5 nc2_srcl


-attachControl nc2_tra  "top" 10 nc1_nbproc
-attachControl nc2_tra "left" 5 nc2_nb2sall
-attachControl nc2_tral  "top" 10 nc2_tra
-attachControl nc2_tral "left" 5 nc2_nb2sall

// nc3 Avancement prétraitement

-attachForm nc3_titp "left" 5
-attachForm nc3_titp "top" 10
-attachForm nc3_tit2 "left" 5
-attachControl nc3_tit2  "top" 20 nc3_titp
-attachForm nc3_pb1 "left" 50
-attachControl nc3_pb1  "top" 10 nc3_tit2
-attachControl nc3_av1 "left" 10 nc3_pb1
-attachControl nc3_av1  "top" 10 nc3_tit2
-attachForm nc3_tit1 "left" 50
-attachControl nc3_tit1  "top" 20 nc3_av1
-attachForm nc3_tit3 "left" 5
-attachControl nc3_tit3  "top" 20 nc3_tit1
-attachForm nc3_pb2 "left" 50
-attachControl nc3_pb2  "top" 10 nc3_tit3
-attachControl nc3_av2 "left" 10 nc3_pb2
-attachControl nc3_av2  "top" 10 nc3_tit3

-attachForm nc3_tit4 "left" 5
-attachControl nc3_tit4  "top" 20 nc3_pb2
-attachForm nc3_pb3 "left" 50
-attachControl nc3_pb3  "top" 10 nc3_tit4
-attachControl nc3_av3 "left" 10 nc3_pb3
-attachControl nc3_av3  "top" 10 nc3_tit4

-attachForm nc3_an "left" 150
-attachControl nc3_an  "top" 80 nc3_tit4
-attachControl nc3_ct  "top" 80 nc3_tit4
-attachControl nc3_ct  "left" 100 nc3_an

// nc4 Parametrage de PASTIS

-attachForm nc4_titp "left" 5
-attachForm nc4_titp "top" 10
-attachForm nc4_des "left" 15
-attachControl nc4_des  "top" 10 nc3_titp
-attachForm nc4_tip1 "left" 30
-attachControl nc4_tip1  "top" 30 nc4_des
-attachControl nc4_px1 "left" 10 nc4_tip1
-attachControl nc4_px1  "top" 30 nc4_des
-attachForm nc4_tip2 "left" 30
```

```
-attachControl nc4_tip2  "top" 22 nc4_tip1
-attachControl nc4_px2  "top" 22 nc4_tip1
-attachControl nc4_px2 "left" 10 nc4_tip2

-attachControl nc4_form  "top" 30 nc4_tip2
-attachForm nc4_form "left" 30
-attachControl nc4_24  "top" 28 nc4_tip2
-attachControl nc4_24 "left" 30 nc4_form
-attachControl nc4_x  "top" 30 nc4_tip2
-attachControl nc4_x "left" 10 nc4_24
-attachControl nc4_36  "top" 28 nc4_tip2
-attachControl nc4_36 "left" 10 nc4_x
-attachControl nc4_mm  "top" 30 nc4_tip2
-attachControl nc4_mm "left" 10 nc4_36

// nc5 Avancement de Pastis

-attachForm nc5_titp "left" 200
-attachForm nc5_titp "top" 10
-attachForm nc5_titp1 "left" 5
-attachControl nc5_titp1  "top" 20 nc5_titp
-attachForm nc5_stit1 "left" 5
-attachControl nc5_stit1  "top" 15 nc5_titp1
-attachForm nc5_pb1 "left" 50
-attachControl nc5_pb1  "top" 10 nc5_stit1
-attachControl nc5_av1 "left" 10 nc5_pb1
-attachControl nc5_av1  "top" 10 nc5_stit1
-attachForm nc5_stit2 "left" 5
-attachControl nc5_stit2  "top" 15 nc5_av1
-attachForm nc5_pb2 "left" 50
-attachControl nc5_pb2  "top" 10 nc5_stit2
-attachControl nc5_av2 "left" 10 nc5_pb2
-attachControl nc5_av2  "top" 10 nc5_stit2

-attachForm nc5_titp2 "left" 5
-attachControl nc5_titp2  "top" 20 nc5_av2
-attachForm nc5_stit3 "left" 5
-attachControl nc5_stit3  "top" 15 nc5_titp2
-attachForm nc5_pb3 "left" 50
-attachControl nc5_pb3  "top" 10 nc5_stit3
-attachControl nc5_av3 "left" 10 nc5_pb3
-attachControl nc5_av3  "top" 10 nc5_stit3
-attachForm nc5_stit4 "left" 5
-attachControl nc5_stit4  "top" 15 nc5_av3
-attachForm nc5_pb4 "left" 50
-attachControl nc5_pb4  "top" 10 nc5_stit4
-attachControl nc5_av4 "left" 10 nc5_pb4
-attachControl nc5_av4  "top" 10 nc5_stit4

-attachForm nc5_an "left" 150
-attachControl nc5_an  "top" 50 nc5_av4
-attachControl nc5_ct  "top" 50 nc5_av4
-attachControl nc5_ct  "left" 100 nc5_an

// nc6 Parametrage de APERO

-attachForm nc6_titp "left" 5
-attachForm nc6_titp "top" 10
-attachForm nc6_des "left" 15
-attachControl nc6_des  "top" 10 nc6_titp
-attachForm nc6_des1 "left" 40
-attachControl nc6_des1  "top" 10 nc6_des
-attachForm nc6_des2 "left" 40
-attachControl nc6_des2  "top" 5 nc6_des1
-attachForm nc6_des3 "left" 40
-attachControl nc6_des3  "top" 5 nc6_des2

-attachForm nc6_src "left" 20
-attachControl nc6_src  "top" 5 nc6_des3
-attachForm nc6_srcl "left" 20
-attachControl nc6_srcl  "top" 5 nc6_src

-attachControl nc6_tif2cal  "left" 10 nc6_srcl
-attachControl nc6_tif2cal "top" 40 nc6_des3
-attachControl nc6_cal2tif  "left" 10 nc6_srcl
-attachControl nc6_cal2tif  "top" 5 nc6_tif2cal

-attachControl nc6_cal  "left" 10 nc6_tif2cal
-attachControl nc6_cal  "top" 5 nc6_des3
-attachControl nc6_call  "left" 10 nc6_tif2cal
-attachControl nc6_call  "top" 5 nc6_cal

-attachControl nc6_tif2glo  "left" 10 nc6_srcl
```

```
-attachControl nc6_tif2glo "top" 40 nc6_cal2tif
-attachControl nc6_glo2tif  "left" 10 nc6_srcl
-attachControl nc6_glo2tif  "top" 5 nc6_tif2glo


-attachControl nc6_glo  "left" 10 nc6_tif2cal
-attachControl nc6_glo  "top" 5 nc6_call
-attachControl nc6_glol  "left" 10 nc6_tif2cal
-attachControl nc6_glol  "top" 5 nc6_glo

-attachControl nc6_tif2loc  "left" 10 nc6_srcl
-attachControl nc6_tif2loc "top" 40 nc6_glo2tif
-attachControl nc6_loc2tif  "left" 10 nc6_srcl
-attachControl nc6_loc2tif  "top" 5 nc6_tif2loc

-attachControl nc6_loc  "left" 10 nc6_tif2cal
-attachControl nc6_loc  "top" 5 nc6_glol
-attachControl nc6_locl  "left" 10 nc6_tif2cal
-attachControl nc6_locl  "top" 5 nc6_loc

-attachForm nc6_errcal  "left" 10
-attachControl nc6_errcal  "top" 5 nc6_srcl

-attachControl nc6_img  "left" 20 nc6_glol
-attachControl nc6_img  "top" 25 nc6_call

// nc7 Avancement de APERO


-attachForm nc7_titp "left" 5
-attachForm nc7_titp "top" 10
-attachForm nc7_des1 "left" 15
-attachControl nc7_des1  "top" 30 nc7_titp
-attachForm nc7_pb1 "left" 50
-attachControl nc7_pb1  "top" 10 nc7_des1
-attachControl nc7_av1 "left" 10 nc7_pb1
-attachControl nc7_av1  "top" 10 nc7_des1

-attachForm nc7_bparam1 "left" 50
-attachControl nc7_bparam1  "top" 10 nc7_av1
-attachControl nc7_rescal "left" 10 nc7_bparam1
-attachControl nc7_rescal  "top" 15 nc7_av1


-attachForm nc7_breit "left" 385
-attachControl nc7_breit  "top" 10 nc7_av1
-attachControl nc7_bstartChant "left" 10 nc7_breit
-attachControl nc7_bstartChant  "top" 10 nc7_av1

-attachForm nc7_des2 "left" 15
-attachControl nc7_des2  "top" 20 nc7_rescal
-attachForm nc7_pb2 "left" 50
-attachControl nc7_pb2  "top" 10 nc7_des2
-attachControl nc7_av2 "left" 10 nc7_pb2
-attachControl nc7_av2  "top" 10 nc7_des2

-attachForm nc7_bparam2 "left" 50
-attachControl nc7_bparam2  "top" 10 nc7_av2
-attachControl nc7_reschant "left" 10 nc7_bparam2
-attachControl nc7_reschant  "top" 15 nc7_av2



-attachForm nc7_bchantreit "left" 385
-attachControl nc7_bchantreit "top" 10 nc7_av2
-attachControl nc7_b3Dsift "top" 10 nc7_av2
-attachControl nc7_b3Dsift "left" 10 nc7_breit

-attachForm nc7_des3 "left" 15
-attachControl nc7_des3  "top" 20 nc7_reschant
-attachForm nc7_pb3 "left" 50
-attachControl nc7_pb3  "top" 10 nc7_des3
-attachControl nc7_av3 "left" 10 nc7_pb3
-attachControl nc7_av3  "top" 10 nc7_des3


// nc7 bis



-attachForm nc7b_titp "top" 10
-attachForm nc7b_titp "left" 5
```

```
            -attachControl nc7b_selCam "top" 10 nc7b_titp
            -attachForm nc7b_selCam "left" 10

            -attachControl nc7b_resCam "top" 15 nc7b_titp
            -attachControl nc7b_resCam "left" 10 nc7b_selCam

            -attachControl nc7b_consCam "top" 10 nc7b_selCam
            -attachForm nc7b_consCam "left" 20

            -attachControl nc7b_bjour "top" 10 nc7b_consCam
            -attachControl nc7b_bjour "left" 5 nc6_call

            -attachControl nc7b_bann "left" 10 nc6_call
            -attachControl nc7b_bann  "top" 5 nc6_tif2loc
            -attachControl nc7b_brec "left" 5 nc7b_bann
            -attachControl nc7b_brec  "top" 5 nc6_tif2loc

            $form0;

    showWindow Mainwin;

    next(0);

}
```

3. PC_Aff

a) affstep.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Permet de gerer les affichages des contrôles par etapes
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////


proc affcmd(int $v)
{
    button -edit -visible $v nc_suiv;
    button -edit -visible $v nc_prec;
}

proc affcmdsuiv(int $v)
{
    button -edit -visible $v nc_suiv;
}

proc affcmdprec(int $v)
{
    button -edit -visible $v nc_prec;
}


proc affstep0(int $v)
{
    button -edit -visible $v nc0_NChant;
    button -edit -visible $v nc0_RChant;
}

proc affstep1(int $v)
{
    button -edit -enable 1 nc_suiv;
}

proc affstep2(int $v)
{

    text -edit -visible $v nc2_tit;
    text -edit -visible $v nc2_des;
```

```
    text -edit -visible $v nc2_src;
    textScrollList -edit -visible $v nc2_srcl;
    button -edit -visible $v nc2_s2nball;
    button -edit -visible $v nc2_s2nbsel;
    button -edit -visible $v nc2_nb2ssel;
    button -edit -visible $v nc2_nb2sall;

    text -edit -visible $v nc2_tra;
    textScrollList -edit -visible $v nc2_tral;

    text -edit -visible $v nc1_dos;
    textField -edit -visible $v nc1_path;
    button -edit -visible $v nc1_par;
    textField -edit -visible $v nc1_raw;
    text -edit -visible $v nc1_traw;
    optionMenuGrp -edit -visible $v nc1_nbproc;
    button -edit -enable 1 nc_suiv;

}

proc affstep3(int $v)
{
    text -edit -visible $v nc3_titp;
    text -edit -visible $v nc3_tit1;
    text -edit -visible $v nc3_tit2;
    progressBar -edit -visible $v nc3_pb1;
    text -edit -visible $v nc3_av1;
    text -edit -visible $v nc3_tit3;
    progressBar -edit -visible $v nc3_pb2;
    text -edit -visible $v nc3_av2;

    text -edit -visible $v nc3_tit4;
    progressBar -edit -visible $v nc3_pb3;
    text -edit -visible $v nc3_av3;

    button -edit -visible $v nc3_an;
    button -edit -visible $v nc3_ct;
}

proc affstep4(int $v)
{
    text -edit -visible $v nc4_titp;
    text -edit -visible $v nc4_des;
    optionMenuGrp -edit -visible $v nc1_nbproc;
    optionMenuGrp -edit -visible $v nc4_tip1;
    optionMenuGrp -edit -visible $v nc4_tip2;
    text -edit -visible $v nc4_px1;
    text -edit -visible $v nc4_px2;
    text -edit -visible $v nc4_form;
    textField -edit -visible $v nc4_24;
    text -edit -visible $v nc4_x;
    textField -edit -visible $v nc4_36;
    text -edit -visible $v nc4_mm;
}

proc affstep5(int $v)
{
    text -edit -visible $v nc5_titp;

    text -edit -visible $v nc5_titp1;
    text -edit -visible $v nc5_stit1;
    progressBar -edit -visible $v nc5_pb1;
    text  -edit -visible $v  nc5_av1;
    text  -edit -visible $v  nc5_stit2;
    progressBar -edit -visible $v  nc5_pb2;
    text  -edit -visible $v nc5_av2;

    text -edit -visible $v nc5_titp2;
    text -edit -visible $v nc5_stit3;
    progressBar -edit -visible $v  nc5_pb3;
    text -edit -visible $v  nc5_av3;
    text -edit -visible $v  nc5_stit4;
    progressBar -edit -visible $v  nc5_pb4;
    text -edit -visible $v  nc5_av4;

    button -edit -visible $v  nc5_an;
    button -edit -visible $v  nc5_ct;
}

proc affstep6(int $v)
{
    text -edit -visible $v nc6_titp;
    text -edit -visible $v nc6_des;
    text -edit -visible $v nc6_des1;
```

```
    text -edit -visible $v nc6_des2;
    text -edit -visible $v nc6_des3;

    text -edit -visible $v nc6_src;
    textScrollList -edit -visible $v nc6_srcl;
    text -edit -visible $v nc6_cal;
    textScrollList -edit -visible $v nc6_call;
    text -edit -visible $v nc6_glo;
    textScrollList -edit -visible $v nc6_glol;
    text -edit -visible $v nc6_loc;
    textScrollList -edit -visible $v nc6_locl;

    button -edit -visible $v nc6_tif2cal;
    button -edit -visible $v nc6_cal2tif;
    button -edit -visible $v nc6_tif2glo;
    button -edit -visible $v nc6_glo2tif;
    button -edit -visible $v nc6_tif2loc;
    button -edit -visible $v nc6_loc2tif;

    image -edit -visible $v nc6_img;

}

global proc affstep7(int $v)
{
    text -edit -visible $v nc7_titp;
    text -edit -visible $v nc7_des1;
    progressBar -edit -visible $v nc7_pb1;
    text -edit -visible $v nc7_av1;
    button -edit -visible $v nc7_breit;

    button -edit -visible $v nc7_bchantreit;

    button -edit -visible $v nc7_bstartChant;

    text -edit -visible $v nc7_des2;
    progressBar -edit -visible $v nc7_pb2;
    text -edit -visible $v nc7_av2;
    button -edit -visible $v nc7_b3Dsift;
    text -edit -visible $v nc7_des3;
    progressBar -edit -visible $v nc7_pb3;
    text -edit -visible $v nc7_av3;

    button -edit -visible $v nc7_bparam1;
    text -edit -visible $v nc7_rescal;


    button -edit -visible $v nc7_bparam2;
    text -edit -visible $v nc7_reschant;
}

global proc affstep7bis(int $v,int $cmd)
{

    global string $lfcam[];

    $cam = `optionMenuGrp -query -ni nc7b_selCam`;


    if ($cam<1)
    {
        optionMenuGrp -edit nc7b_selCam;
        for ( $i=0; $i < size($lfcam); $i++ )
        {
            menuItem -label $lfcam[$i];
        }
    }

    affResSel();

    $a = abs($v-1);
    affstep7($a);

    text -edit -visible $v nc6_src;
    textScrollList -edit -visible $v nc6_srcl;
    text -edit -visible $v nc6_cal;
    textScrollList -edit -visible $v nc6_call;
    text -edit -visible $v nc6_glo;
    textScrollList -edit -visible $v nc6_glol;
    text -edit -visible $v nc6_loc;
    textScrollList -edit -visible $v nc6_locl;
```

```
    button -edit -visible $v nc6_tif2cal;
    button -edit -visible $v nc6_cal2tif;
    button -edit -visible $v nc6_tif2glo;
    button -edit -visible $v nc6_glo2tif;
    button -edit -visible $v nc6_tif2loc;
    button -edit -visible $v nc6_loc2tif;
    image -edit -visible $v nc6_img;

    text -edit -visible $v nc7b_consCam;



    if ($cmd)
    {
        // commande pour le calcul du chantier
        text -edit -visible $v -label "Analyse de l'aerotriangulation du chantier" nc7b_titp;
        optionMenuGrp -edit -visible 0 nc7b_selCam;
        text -edit -visible 0 nc7b_resCam;


        $cons = "Conseil : Nous vous invitons a consulter le journal en cas de residu
important.";
        text -edit -label $cons nc7b_consCam;


        button -edit -visible $v -command "Journal(1)" nc7b_bjour;
        button -edit -visible $v -command "ReChant()" nc7b_brec;
        button -edit -visible $v -command "affstep7bis(0,1)" nc7b_bann;
    }
    else
    {
        // commande pour la calibration
        text -edit -visible $v -label "Analyse de la calibration" nc7b_titp;
        optionMenuGrp -edit -visible $v nc7b_selCam;
        text -edit -visible $v nc7b_resCam;

        button -edit -visible $v -command "Journal(0)" nc7b_bjour;
        button -edit -visible $v -command "ReCalib()" nc7b_brec;
        button -edit -visible $v -command "affstep7bis(0,0)" nc7b_bann;
    }

}


global proc next(int $mov)
{

    global int $step;
    global string $ltifnb[];
    global string $imgH;
    global string $imgW;
    global string $pathproj;


    if ($mov==1)
    {
        $step = $step + 1;
    }
    else if ($mov==0)
    {
        $step = 2;
    }
    else
    {
        $step = $step - 1;
    }


    if ($step==0)
    {
        // Page de presentation (Inusite dans NUBES Forma)
        affstep0(1);
        affstep1(0);
        affcmd(0);
    }
    else if ($step==1)
    {
        // Information general du chantier (Inusite dans NUBES Forma)
        affstep0(0);
        affstep1(1);
        affstep2(0);
        affcmd(1);
    }
```

```
else if ($step==2)
{
    // Recherche des images sources
    affcmd(1);
    affstep0(0);
    affstep1(0);
    affstep2(1);

    $lnb = `textScrollList -query -ai nc2_tral`;
    $nb = size($lnb);

    if ($nb<2)
    {
        button -edit -enable 0 nc_suiv;
    }
    else
    {
        button -edit -enable 1 nc_suiv;
    }


}
else if ($step==3)
{
    // Avancement du pretraitement



    affstep2(0);
    affstep3(1);
    affcmd(0);

    $ltifnb = `textScrollList -query -ai nc2_tral`;

    IniImg();


}else if ($step==4)
{
    // Parametrage de PASTIS
    affcmd(1);
    affstep3(0);
    affstep4(1);
}
else if ($step==5)
{
    // Avancement de PASTIS

    $imgH = `textField -query -text nc4_24`;
    $imgW = `textField -query -text nc4_36`;

    affcmd(0);
    affstep4(0);
    affstep5(1);
    TraitPastis();

}
else if ($step==6)
{
    // Parametrage APERO

    affcmdsuiv(1);
    affstep5(0);
    affstep6(1);

    $ltif = `getFileList -folder $pathproj -filespec "*.tif"`;
    for ( $i=0; $i < size($ltif); $i++ ) {
        textScrollList -edit -append $ltif[$i] nc6_srcl;
    }


}
else if ($step==7)
{
    affcmdsuiv(0);
    affstep6(0);
    affstep7(1);
    text -edit -visible 0 nc7_rescal;

    TraitApero();
}
```

```
}

global proc openChantier()
{
    // Fonction utilise pour acceder directement à une etape de PhotoCloud en mode DEBUG (Inusite dans NUBES
Forma)

    global int $step;
    global string $Reso3Dsift;
    global string $pathproj;

    global string $lfcam[];

    $lfcam[0]="F015";
    $Reso3Dsift = "38";

    affstep0(0);
    affstep6(1);

    affcmdsuiv(1);

    $step = 6 ;

    $ltif = `getFileList -folder $pathproj -filespec "*.tif"`;
    for ( $i=0; $i < size($ltif); $i++ ) {
        textScrollList -edit -append $ltif[$i] nc6_srcl;
    }


}
```

b) anc2.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Permet d'organiser et de trier dans l'ordre les listes du panneau step2
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////


global proc anc2_sortsrc()
{
    $ai = `textScrollList -query -ai nc2_srcl`;
    $sai = sort($ai);
    textScrollList -edit -ra nc2_srcl;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc2_srcl;
    }
}

global proc anc2_sorttra()
{
    $ai = `textScrollList -query -ai nc2_tral`;
    $sai = sort($ai);
    textScrollList -edit -ra nc2_tral;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc2_tral;
    }
}

//Lien raw<=>nb

global proc anc2_raw2nball()
{
    $ai = `textScrollList -query -ai nc2_srcl`;

    textScrollList -edit -ra nc2_srcl;

    for ( $i=0; $i < size($ai); $i++ )
```

```
    {
        textScrollList -edit -append $ai[$i] nc2_tral;
    }

    $ai = `textScrollList -query -ai nc2_tral`;
    $sai = sort($ai);
    textScrollList -edit -ra nc2_tral;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc2_tral;
    }
    anc2_sorttra();

    $lnb = `textScrollList -query -ai nc2_tral`;
    $nb = size($lnb);

    if ($nb<2)
    {
        button -edit -enable 0 nc_suiv;
    }
    else
    {
        button -edit -enable 1 nc_suiv;
    }
}


global proc anc2_nb2rawall()
{
    $ai = `textScrollList -query -ai nc2_tral`;

    textScrollList -edit -ra nc2_tral;

    for ( $i=0; $i < size($ai); $i++ )
    {
        textScrollList -edit -append $ai[$i] nc2_srcl;
    }

    anc2_sortsrc();

    button -edit -enable 0 nc_suiv;

}

global proc anc2_raw2nbsel()
{

    $nsi = `textScrollList -query -nsi  nc2_srcl`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc2_srcl`;

        textScrollList -edit -append $nsrc nc2_tral;

        textScrollList -edit -ri $nsrc nc2_srcl;
    }

    anc2_sorttra();

    $lnb = `textScrollList -query -ai nc2_tral`;
    $nb = size($lnb);

    if ($nb<2)
    {
        button -edit -enable 0 nc_suiv;
    }
    else
    {
        button -edit -enable 1 nc_suiv;
    }
}

global proc anc2_nb2rawsel()
{

    $nsi = `textScrollList -query -nsi  nc2_tral`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc2_tral`;

        textScrollList -edit -append $nsrc nc2_srcl;
```

```
        textScrollList -edit -ri $nsrc nc2_tral;

    }

    anc2_sortsrc();

    $lnb = `textScrollList -query -ai nc2_tral`;
    $nb = size($lnb);

    if ($nb<2)
    {
        button -edit -enable 0 nc_suiv;
    }
    else
    {
        button -edit -enable 1 nc_suiv;
    }
}
```

c) anc6.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Permet d'organiser et de trier dans l'ordre les listes des blocs du panneau step6
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////

global proc anc6_sortsrc()
{
    $ai = `textScrollList -query -ai nc6_srcl`;
    $sai = sort($ai);
    textScrollList -edit -ra nc6_srcl;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc6_srcl;
    }
}

global proc anc6_sortcal()
{
    $ai = `textScrollList -query -ai nc6_call`;
    $sai = sort($ai);
    textScrollList -edit -ra nc6_call;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc6_call;
    }
}

global proc anc6_sortglo()
{
    $ai = `textScrollList -query -ai nc6_glol`;
    $sai = sort($ai);
    textScrollList -edit -ra nc6_glol;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc6_glol;
    }
}

global proc anc6_sortloc()
{
    $ai = `textScrollList -query -ai nc6_locl`;
    $sai = sort($ai);
    textScrollList -edit -ra nc6_locl;
    for ( $i=0; $i < size($sai); $i++ )
    {
        textScrollList -edit -append $sai[$i] nc6_locl;
    }
}
```

```
proc anc6_testsuiv()
{

    global string $lfcam[];

    button -edit -enable 1 nc_suiv;

    // test des calibrations


    string $calpb[];

    for ( $i=0; $i < size($lfcam); $i++ )
    {
        $testcal = false;
        $ai = `textScrollList -query -ai nc6_call`;
        for ( $j=0; $j < size($ai); $j++ )
        {
            if (startString($ai[$j],4)==$lfcam[$i])
            {
                $testcal = true;
            }
        }

        if ($testcal)
        {
        }else
        {
            $calpb[size($calpb)]=$lfcam[$i];
        }

    }

    if (size($calpb)>=1)
    {

        $error = "Pas de calibration pour la focale ";

        for ( $i=0; $i < size($calpb); $i++ )
        {
            $error = $error +" "+$calpb[$i];
        }

        text -edit -label $error -visible 1 nc6_errcal;

    }else
    {

        text -edit -label "" -visible 0 nc6_errcal;
    }


}
//Lien tif<=>cal

global proc anc6_tif2cal()
{

    $nsi = `textScrollList -query -nsi  nc6_srcl`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc6_srcl`;

        textScrollList -edit -append $nsrc nc6_call;

        textScrollList -edit -ri $nsrc nc6_srcl;
    }

    anc6_sortcal();

    anc6_testsuiv();
}

global proc anc6_cal2tif()
{

    $nsi = `textScrollList -query -nsi  nc6_call`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc6_call`;
```

```
        textScrollList -edit -append $nsrc nc6_srcl;

        textScrollList -edit -ri $nsrc nc6_call;

    }

    anc6_sortsrc();

    anc6_testsuiv();
}

//Lien tif<=>glo

global proc anc6_tif2glo()
{

    $nsi = `textScrollList -query -nsi  nc6_srcl`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc6_srcl`;

        textScrollList -edit -append $nsrc nc6_glol;

        textScrollList -edit -ri $nsrc nc6_srcl;
    }

    anc6_sortglo();

    anc6_testsuiv();
}

global proc anc6_glo2tif()
{

    $nsi = `textScrollList -query -nsi  nc6_glol`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc6_glol`;

        textScrollList -edit -append $nsrc nc6_srcl;

        textScrollList -edit -ri $nsrc nc6_glol;

    }

    anc6_sortsrc();

    anc6_testsuiv();
}

//Lien tif<=>loc

global proc anc6_tif2loc()
{

    $nsi = `textScrollList -query -nsi  nc6_srcl`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc6_srcl`;

        textScrollList -edit -append $nsrc nc6_locl;

        textScrollList -edit -ri $nsrc nc6_srcl;
    }

    anc6_sortloc();

    anc6_testsuiv();
}

global proc anc6_loc2tif()
{

    $nsi = `textScrollList -query -nsi  nc6_locl`;

    for ( $i=0; $i < $nsi; $i++ )
    {
        $nsrc = `textScrollList -query -si  nc6_locl`;

        textScrollList -edit -append $nsrc nc6_srcl;
```

```
        textScrollList -edit -ri $nsrc nc6_locl;

    }

    anc6_sortsrc();

    anc6_testsuiv();
}

global proc anc6_viewimg(int $cmd)
{

    global string $pathproj;

    string $simg[];

    if ($cmd==0)
    {
        $simg = `textScrollList -query -si  nc6_srcl`;
    } else if ($cmd==1)
    {
        $simg = `textScrollList -query -si  nc6_call`;
    } else if ($cmd==2)
    {
        $simg = `textScrollList -query -si  nc6_glol`;
    } else if ($cmd==3)
    {
        $simg = `textScrollList -query -si  nc6_locl`;
    }
    $img = $pathproj+"mini/"+startString($simg[0],27)+"jpg";

    image -edit -i $img nc6_img;

}
```

d) camera.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Convertir et sauvegarder les positions et orientations des caméras du chantier
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////


global proc string setCamera(string $camfile)
{
    global string $pathproj;
    global string $pathprojroot;

    $pathcam = $pathproj+"Ori-F/OrFinale-"+$camfile+".xml";

    string $theFile = loadXML($pathcam);

    string $L11=`getData("L11")`;
    string $L21=`getData("L21")`;
    string $L31=`getData("L31")`;
    string $Centre1=`getData("Centre1")`;

    string $subL11[]; tokenizeList($L11, $subL11);
    string $subL21[]; tokenizeList($L21, $subL21);
    string $subL31[]; tokenizeList($L31, $subL31);
    string $subCentre[]; tokenizeList($Centre1, $subCentre);

    float $r11=$subL11[0];
    float $r12=$subL11[1];
    float $r13=$subL11[2];

    float $r21=$subL21[0];
    float $r22=$subL21[1];
    float $r23=$subL21[2];
```

```
    float $r31=$subL31[0];
    float $r32=$subL31[1];
    float $r33=$subL31[2];

    float $x=$subCentre[0];
    float $y=$subCentre[1];
    float $z=$subCentre[2];


    $camname = startString($camfile,13);
    int $foc = endString(startString($camfile,4),3);

    string $cameraName[] = `camera -fl $foc` ;


    setAttr ($cameraName[0]+".xm") -type "matrix" $r11 $r21 $r31 0 (-$r12) (-$r22) (-$r32)  0
(-$r13) (-$r23) (-$r33) 0 $x $y $z 1;

    // reinitialisation des parametres de rotation
    rotate -r -os 0 0 0;
    undo;

    string $imagePlaneName = `createNode imagePlane`;

    $pathip = $pathproj+"moy_jpg/"+$camname+"_MpDcraw8B_GB.jpg";

    setAttr ( $imagePlaneName+".imageName") -type "string" $pathip;

    setAttr ( $imagePlaneName+".useFrameExtension" ) 1;

    cameraImagePlaneUpdate $cameraName[0] $imagePlaneName ;

    setAttr ($imagePlaneName+".depth") 1;
    setAttr ($imagePlaneName+".alphaGain") 0.75;

    $cmd = "rename \"camera1\" \""+$camname+"\" ;";
    eval ($cmd) ;

    delete "XML1";



////////////////////////////////////////////////////////////////////////////////////////////////////////////////
///

    //Redaction des cameras au format NUBES

////////////////////////////////////////////////////////////////////////////////////////////////////////////////
///


    system("cp "+$pathip+" "+$pathprojroot+"photos/calibred/"+$camname+".JPG");
    system("cp "+$pathproj+"mini/"+$camname+"_MpDcraw8B_GB.jpg
"+$pathprojroot+"photos/imagettes/"+$camname+".JPG");

    string $fichier=($pathprojroot+"photos/calibred/"+$camname+".mel");

    $fileId=`fopen $fichier "w"`;



    fprint $fileId "global proc cameraSET()\n       {\n            ";


    //attributs de position et d'orientation


    float $rx = `getAttr ($camname+".rotateX")`;
    float $ry = `getAttr ($camname+".rotateY")`;
    float $rz = `getAttr ($camname+".rotateZ")`;



    fprint $fileId ("setAttr \"photoCam1.translateX\" " + $x + ";\n              setAttr
\"photoCam1.translateY\" "+ $y + ";\n              setAttr \"photoCam1.translateZ\" " + $z +
";\n\n");
    fprint $fileId ("        setAttr \"photoCam1.rotateX\" " + $rx + ";\n        setAttr
\"photoCam1.rotateY\" "+ $ry + ";\n         setAttr \"photoCam1.rotateZ\" " + $rz + ";\n\n");
```

```
    fprint $fileId "          setAttr  \"photoCamShape2.v\" -k off;\n            setAttr
\"photoCamShape2.rnd\" no;\n";



    float $cap1=`getAttr ($camname+".horizontalFilmAperture")`;
    float $cap2=`getAttr ($camname+".verticalFilmAperture")`;

    fprint $fileId ("         setAttr  \"photoCamShape2.cap\" -type \"double2\" "+$cap1+"
"+$cap2+";\n");
    fprint $fileId ("         setAttr  \"photoCamShape2.fl\" "+$foc+";\n          setAttr
\"photoCamShape2.ow\" 30;\n\n");    //NB on met 30, je ne vois pas ce que ce paramètre modifie...(ND lazare)

    fprint $fileId "          setAttr \"imagePlanePhoto1.dic\" true;\n            setAttr
\"imagePlanePhoto1.f\" 4;\n          setAttr \"imagePlanePhoto1.dic\" true;\n";
    fprint $fileId ("         setAttr \"imagePlanePhoto1.imn\" -type \"string\"
\""+$pathprojroot+"photos/calibred/"+$camname+".JPG\";\n");


    fprint $fileId ("         setAttr \"imagePlanePhoto1.cov\" -type \"double2\" 1104
824;\n");

    fprint $fileId ("         setAttr \"imagePlanePhoto1.s\" -type \"double2\" "+$cap1+"
"+$cap2+";\n");

    fprint $fileId ("         setAttr \"imagePlanePhoto1.d\" 200;\n\n     }");

    fclose $fileId;


    $return = $x+" "+$y+" "+$z+" "+$rx+" "+$ry+" "+$rz;

    return $return;

}
```

4. PC_ErrSys

```
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Fonction permetant de savoir si un processus est encore en cours
////
////
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////

global proc int alive(int $pid)
{
    $cmd="ps "+$pid;
    $pipe = popen( $cmd, "r" );
    $ligne = fgetline( $pipe );
    $ligne = fgetline( $pipe );
    $letat = stringToStringArray($ligne, " ");
    pclose( $pipe );

    $ans = 1;

    if ($letat[2]=="Z")
    {
        $ans = 0;
    }
    else
    {
        $ans = 1;
    }
    return $ans;

}
```

5. PC_Lib

Ce dossier contient la librairie MEL de gestion des fichiers XML pour atteindre facilement les nœuds d'un fichier. Je n'ai donc pas rédigé ce script.

6. PC_Sav

En cours de rédaction.

7. PC_Trait

a) TraitImg.mel :

```
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////
////
//// Auteur :              Aymeric GODET
////
//// Date :                10/09/10
////
//// Presentation :        Fonctions du prétraitement des images
////
////
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////////////////
//      Processus creant les tifs des images raw contenues dans un fichier
////////////////////////////////////////////////////////////////////////

proc int convertTifFolder(string $path,int $nbtot)
{

    global string $raw;
    global int $WProc;

    system("MapCmd       MpDcraw       \"P=(.*)."+$raw+"\"       16B=0       GB=1       M=MkPC1
\"T=\\$1_MpDcraw8B_GB.tif\"");

    $pid = exec("make all -f MkPC1 -j"+$WProc);


    $mtif = 0;

    $controlInfiny = true;

    while (($mtif<$nbtot)&&($controlInfiny))
    {

        $listtif = `getFileList -folder $path -filespec "*.tif"`;
        $mtif = size($listtif);

        $spc2 = " "+$mtif+"/"+$nbtot;


        progressBar -edit -pr $mtif nc3_pb2;
        text -edit -label $spc2 nc3_av2;

        $controlInfiny = alive($pid);

        pause -sec 1;

    }
    pause -sec 1;

    $ans = 1;

    if ($mtif==$nbtot)
```

```
    {
        $ans = 1;
    }
    else
    {
        $ans = 0;
    }

    return $ans;

}



////////////////////////////////////////////////////////////////////////
//      Pretraitement des images (copies des raw, creation des tif et jpg)
////////////////////////////////////////////////////////////////////////

global proc IniImg()
{
    global string $ltifnb[];
    global string $WPath;
    global string $raw;
    global int $WProc;
    global string $lfcam[];
    global string $pathproj;

    string $lfoc[];

    //On déplace la ligne de commande dans le repertoire image du projet
    chdir $pathproj;
    system("mkdir ../TMP");

    $slnb = size($ltifnb);

    progressBar -edit -maxValue $slnb nc3_pb1;
    progressBar -edit -maxValue $slnb nc3_pb2;
    progressBar -edit -maxValue $slnb nc3_pb3;



    // On déplace les images au bon endroit dans le projet NUBES
    for ( $i=0; $i < $slnb; $i++ ) {
        $cmdligne = "cp "+$WPath+$ltifnb[$i]+" "+$pathproj;
        system($cmdligne);
        /////////////////////////// Chargement des donnees ////////////////////////////////////
        progressBar -edit -step 1 nc3_pb1;

        $actu = $i+1;
        $spc = " "+$actu+"/"+$slnb;

        text -edit -label $spc nc3_av1;
    }

    // On détecte les focales utilisées et on renome les images
    $cmdligne  =  "MyRename  \""+$pathproj+"(.*)."+$raw+"\"  \"F\\$2_\\$1."+$raw+"\"  AddFoc=1
Exe=1";
    system($cmdligne);

    $sraw = "*."+$raw;
    $limg = `getFileList -folder $pathproj -filespec $sraw`;



    $lfoc[0] = startString($limg[0],4);
    $lfcam[0]=startString($limg[0],4);

    $nc3 = `text -query -label nc3_tit1`;
    $nc3 = $nc3 +" "+$lfoc[0];

    text -edit -label $nc3 nc3_tit1;

    $num = startString($limg[0],13);
    textScrollList -edit -a $num listnumimg;


    for ( $i=1; $i < size($limg); $i++ ) {

        $num = startString($limg[$i],13);
        textScrollList -edit -a $num listnumimg;
```

```
    $fsave = true;

    for ( $j=0;$j<size($lfoc);$j++){

        if ($lfoc[$j]==startString($limg[$i],4))
        {
            $fsave = false; // dans ces condition la focale n'est pas nouvelle
        }

    }
    if ($fsave)
    {
        $size = size($lfoc);
        $lfoc[$size]=startString($limg[$i],4);
        $lfcam[$size]=startString($limg[$i],4);

        $nc3 = `text -query -label nc3_tit1`;
        $nc3 = $nc3 +" , "+$lfoc[size($lfoc)-1];


        text -edit -label $nc3 nc3_tit1;

    }
}


////////////////////////////// Avancement redaction des tifs ////////////////////////////////////////


if ($WProc>1)
{
    $WProc = $WProc - 1;
}

$prem = convertTifFolder($pathproj,$slnb);

system("mkdir Raw");

if ($prem)
{

    system("mv *."+$raw+" ./Raw");

    system("mkdir mini");

}
else
{
    print("\n");
    print("\n");
    print("!!!!!!!!!!!! On passe en mode debug system !!!!!!!!!!!!");
    print("\n");
    print("\n");

    $fin = false;

    while($fin==false)
    {
        $listtif = `getFileList -folder $pathproj -filespec "*.tif"`;
        for ( $i=0; $i < size($listtif); $i++ )
        {
            $iraw = startString($listtif[$i],13)+".raw";
            system("mv "+$iraw+" ./Raw");
        }
        system("rm *.pgm");
        $fin = convertTifFolder($pathproj,$slnb);
    }

    system("mv *."+$raw+" ./Raw");



}


iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC0;


$listtif = `getFileList -folder $pathproj -filespec "*.tif"`;

system("mkdir mini");
```

```
    system("mkdir moy_jpg");
    system("mkdir Masque");
    system("mkdir PLY");

    $nb = size($listtif);

    for ($j = 0 ; $j< $nb ; $j++)
    {

        system("convert           "+$pathproj+$listtif[$j]+"           -scale           120x180
"+$pathproj+"mini/"+startString($listtif[$j],27)+"jpg");

        system("convert           "+$pathproj+$listtif[$j]+"           -scale           800x800
"+$pathproj+"moy_jpg/"+startString($listtif[$j],27)+"jpg");

        $evol = $j + 1;
        $spc2 = " "+$evol+"/"+$nb;
        progressBar -edit -pr $evol nc3_pb3;
        text -edit -label $spc2 nc3_av3;
    }

    iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC1;

    button -edit -label "Continuer" -enable 1 -command"next(1)" nc3_ct;


}
```

b) TraitPastis.mel :

```
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Les fonctions du traitement du chantier par PASTIS
////
////
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////

// Generation des fichiers xml des paramètres Pastis et évaluation de l'état d'avancement
// Attention il peut y avoir des problème de langue lors de la recherche automatique de la taille image -->  $entete =
"Image size    : ";


////////////////////////////////////////////////////////////////////////
//      Redaction des fichiers de paramètre et lancement de Pastis (les 2 niveaux à la suite)
////////////////////////////////////////////////////////////////////////

global proc TraitPastis()
{
    global string $ImgDes;
    global string $lfcam[];
    global string $imgH;
    global string $imgW;
    global int $WProc;
    global string $ltifnb[];
    global string $Reso3Dsift;
    global string $pathproj;

    // Copie des donnees system pour faire fonctionner PASTIS

    $commandline = "cp -r /usr/Pastis "+$pathproj+"bin/";
    system($commandline);

    // Determination du rapport focale mm -> px
    float $Hs = $imgH;
    float $Ws = $imgW;
    int $maxs = 1;
    int $maxe = 1;
    int $We = 1;
    int $He = 1;
```

```
if ($Hs>$Ws)
{
    $maxs = $Hs;
}
else
{
    $maxs = $Ws;
}

$listtif = `getFileList -folder $pathproj -filespec "*.tif"`;


$cmd = "identify -format \"%[fx:w] %[fx:h]\" "+$pathproj+$listtif[0];

$pipe = popen( $cmd, "r" );

$lastdat = fgetline( $pipe );

pclose( $pipe );

$taille = stringToStringArray($lastdat, " ");



int $We = $taille[0];
int $He = $taille[1];

if ($We>$He)
{
    $maxe = $We;
}
else
{
    $maxe = $He;
}


$rapFoc = $maxe / $maxs;


////////////////////////// Creation des Fichier de calibration initiaux  ////////////////////////////

for ( $i=0; $i < size($lfcam); $i++ )
{

    $jnum = endString($lfcam[$i],3);
    float $focmm = $jnum;

   if ($focmm>=19)

   {

        $pathShell = $pathproj+"Cal-"+$jnum+"-Init.xml";
        $fileId = fopen($pathShell,"w");

        fprint($fileId,"<ExportAPERO>\n");
        fprint($fileId,"<CalibrationInternConique>\n");
        fprint($fileId,"<KnownConv>eConvApero_DistM2C</KnownConv>\n");

        $PPx = floor($We / 2);
        $PPy = floor($He / 2);

        fprint($fileId,"<PP> "+$PPx+"   "+$PPy+" </PP>\n");

        $F = $focmm * $rapFoc;

        fprint($fileId,"<F>   "+$F+"  </F>\n");
        fprint($fileId,"<SzIm>"+$We+"   "+$He+"</SzIm>\n");
        fprint($fileId,"<CalibDistortion>\n");
        fprint($fileId,"<ModRad>\n");
        fprint($fileId,"<CDist> "+$PPx+"   "+$PPy+"  </CDist>\n");
        fprint($fileId,"</ModRad>\n");
        fprint($fileId,"</CalibDistortion>\n");
        fprint($fileId,"</CalibrationInternConique>\n");
        fprint($fileId,"</ExportAPERO>\n");

        fclose($fileId);

   }

    else

    {
```

```
// Le model de distrortion utilisée dans ce cas est celui d'un fish eye

$pathShell = $pathproj+"Cal-"+$jnum+"-Init.xml";
$fileId = fopen($pathShell,"w");


$PPx = floor($We / 2);
$PPy = floor($He / 2);

$F = $focmm * $rapFoc;

fprint($fileId,"<ExportAPERO>\n");
fprint($fileId,"<CalibrationInternConique>\n");
fprint($fileId,"<KnownConv>eConvApero_DistM2C</KnownConv>\n");
fprint($fileId,"<PP>"+$PPx+"   "+$PPy+"</PP>\n");
fprint($fileId,"<F>"+$F+"</F>\n");
fprint($fileId,"<SzIm>"+$We+"   "+$He+"</SzIm>\n");
fprint($fileId,"<RayonUtile>3300</RayonUtile>\n");
fprint($fileId,"<CalibDistortion>\n");
fprint($fileId,"<ModUnif>\n");
fprint($fileId,"<TypeModele>eModele_FishEye_10_5_5</TypeModele>\n");
fprint($fileId,"<Params>"+$PPx+"</Params>\n");
fprint($fileId,"<Params>"+$PPy+"</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
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fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Params>0</Params>\n");
fprint($fileId,"<Etats>2409</Etats>\n");
fprint($fileId,"</ModUnif>\n");
fprint($fileId,"</CalibDistortion>\n");
fprint($fileId,"</CalibrationInternConique>\n");
fprint($fileId,"</ExportAPERO>\n");




fclose($fileId);
```

```
        }

    }

    ////////////////////////////  Creation du fichier descripteur  ////////////////////////////////////

    $pathShell = $pathproj+"MicMac-LocalChantierDescripteur.xml";

    $fileId = fopen($pathShell,"w");

    fprint($fileId,"<Global>\n");
    fprint($fileId,"<ChantierDescripteur\n");
    fprint($fileId,"Subst=\"@$#1\"\n");
    fprint($fileId,"NameDecl=\"@$#1\"\n");
    fprint($fileId,">\n");

    ////// Formule generique des noms des images du chantier

    fprint($fileId,"<KeyedSetsOfNames >\n");
    fprint($fileId,"<Sets>\n");
    fprint($fileId,"<PatternAccepteur>         F[0-9]{3}_"+$ImgDes+"_[0-9]{4}_MpDcraw8B_GB.tif
</PatternAccepteur>\n");
    fprint($fileId,"</Sets>\n");
    fprint($fileId,"<Key > Key-Set-All-Im </Key>\n");
    fprint($fileId,"</KeyedSetsOfNames>\n");


    fprint($fileId,"<KeyedSetsORels >\n");
    fprint($fileId,"<Sets>\n");
    fprint($fileId,"<ByAdjacence>\n");
    fprint($fileId,"<KeySets >  Key-Set-All-Im </KeySets>\n");
    fprint($fileId,"<DeltaMin > -5000 </DeltaMin>\n");
    fprint($fileId,"<DeltaMax > 5000  </DeltaMax>\n");
    fprint($fileId,"</ByAdjacence>\n");
    fprint($fileId,"</Sets>\n");
    fprint($fileId,"<Key>  Key-Rel-All-Cples </Key>\n");
    fprint($fileId,"</KeyedSetsORels>\n");

    fprint($fileId,"<KeyedSetsORels>\n");
    fprint($fileId,"<Sets >\n");
    fprint($fileId,"<ByAdjacence>\n");
    fprint($fileId,"<KeySets>  Key-Set-All-Im   </KeySets>\n");
    fprint($fileId,"<DeltaMax > 10000  </DeltaMax>\n");
    fprint($fileId,"<DeltaMin > -10000 </DeltaMin>\n");
    fprint($fileId,"<Filtre>\n");
    fprint($fileId,"<FiltreByRelSsEch>\n");
    fprint($fileId,"<KeySet >  Key-Set-SsRes-HomolPastisBin          </KeySet>\n");
    fprint($fileId,"<KeyAssocCple>                        Key-Assoc-SsRes-CpleIm2HomolPastisBin
</KeyAssocCple>\n");
    fprint($fileId,"<SeuilBasNbPts> 3 </SeuilBasNbPts>\n");
    fprint($fileId,"<SeuilHautNbPts> 3 </SeuilHautNbPts>\n");
    fprint($fileId,"<NbMinCple> 100000 </NbMinCple>\n");
    fprint($fileId,"</FiltreByRelSsEch>\n");
    fprint($fileId,"</Filtre>\n");
    fprint($fileId,"</ByAdjacence>\n");
    fprint($fileId,"</Sets>\n");
    fprint($fileId,"<Key  > Key-Rel-All-Cples-Filtr-SsEch </Key>\n");
    fprint($fileId,"</KeyedSetsORels>\n");

    /////////// Formule generique de lien entre images et calibrations

    fprint($fileId,"<KeyedNamesAssociations>\n");
    fprint($fileId,"<Calcs>\n");
    fprint($fileId,"<Arrite>  1 1 </Arrite>\n");
    fprint($fileId,"<Direct>\n");
    fprint($fileId,"<PatternTransform> F([0-9]{3})_.*.(tif|TIF) </PatternTransform>\n");
    fprint($fileId,"<CalcName>   Cal-$1-Init.xml </CalcName>\n");
    fprint($fileId,"</Direct>\n");
    fprint($fileId,"</Calcs>\n");
    fprint($fileId,"<Key>   Key-Assoc-CalibOfIm </Key>\n");
    fprint($fileId,"</KeyedNamesAssociations>\n");

    fprint($fileId,"<KeyedNamesAssociations>\n");
    fprint($fileId,"<Calcs>\n");
    fprint($fileId,"<Arrite>  1 1 </Arrite>\n");
    fprint($fileId,"<Direct>\n");
    fprint($fileId,"<PatternTransform> (.*)_MpDcraw8B_GB\.tif  </PatternTransform>\n");
    fprint($fileId,"<CalcName>  Orient/OrInit-$1_MpDcraw8B_GB.xml  </CalcName>\n");
    fprint($fileId,"</Direct>\n");
    fprint($fileId,"<Inverse>\n");
    fprint($fileId,"<PatternTransform>                    Orient/OrInit-(.*)_MpDcraw8B_GB\.xml
</PatternTransform>\n");
```

```
    fprint($fileId,"<CalcName>  $1_MpDcraw8B_GB.tif  </CalcName>\n");
    fprint($fileId,"</Inverse>\n");
    fprint($fileId,"</Calcs>\n");
    fprint($fileId,"<Key>   Key-Assoc-Im2OrInit </Key>\n");
    fprint($fileId,"</KeyedNamesAssociations>\n");



    fprint($fileId,"</ChantierDescripteur>\n");
    fprint($fileId,"</Global>\n");

    fclose($fileId);

    ////////////////////// Gestion de l'avancement du traitement  ////////////////////////////


    int $reso1 = `optionMenuGrp -query -value nc4_tip1`;
    $pastis1  =  exec("Pastis  "+$pathproj+"  Key-Rel-All-Cples  "+$reso1+"  FiltreOnlyDupl=1
SsRes=1 MkF=MkPas NbMinPtsExp=2"); // marche mais il faut être gentil ;)


    //// Analyse de l'avancement Creation Imagette de la passe 1 :


    $slnb = size($ltifnb);

    progressBar -edit -maxValue $slnb nc5_pb1;

    $mtif=0;

    $control=1;

    while ((($mtif<$slnb)&&($control)))
    {

        string $dirList[];
        $mtif=-1;

        $pipe = popen( "ls -l ./Pastis/*.tif", "r" );
        while ( !feof( $pipe ) ) {
            $dirList[size( $dirList )] = fgetline( $pipe );
            $mtif=$mtif+1;
        }


        pclose( $pipe );


        $spc2 = " "+$mtif+"/"+$slnb;


        progressBar -edit -pr $mtif nc5_pb1;
        text -edit -label $spc2 nc5_av1;

        $control = alive($pastis1);

        pause -sec 1;


    }

    $control = true;

    while ($control)
    {
        $control = alive($pastis1);
        pause -sec 1;
    }

    $pid = exec("make all -f MkPas -j"+$WProc);



////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
    //// Analyse de l'avancement du calcul des points homologues de la passe 1 :


    progressBar -edit -maxValue $slnb nc5_pb2;

    $mtif=0;
```

```
textScrollList -edit -sii 1 listnumimg;
$imf = `textScrollList -query -si listnumimg`;


$lastdat="ini";

$res = "000"; //resolution de la passe 1

$control=1;

while ((($mtif<$slnb)&&($control)))
{
    string $ldirList[];

    string $lnum[];
    string $num;
    $mtif=-1;

    $pipe = popen( "ls -l ./Pastis/*/*.result", "r" );

    while ( !feof( $pipe ) ) {

        $lastdat1 = fgetline( $pipe );

        if($lastdat1!=""){
            $lastdat = fgetline( $pipe );
        }

    }

    pclose( $pipe );

    $lnum = stringToStringArray($lastdat, "_");


    if (size($lnum)>=10){

        $res = endString($lnum[0],3); // resolution de la 1iere passe en round((widthOri/widthssEch)*10)

        $num = $lnum[2]+"_"+$lnum[3]+"_"+$lnum[4]; // img en cours de traitement
        string $imft =  $lnum[10];// img associé

        textScrollList -edit -da listnumimg;
        textScrollList -edit -si $num listnumimg;

        $listsel = `textScrollList -query -sii listnumimg`;

        $mtif = $listsel[0];

        $spc2 = " "+$mtif+"/"+$slnb;
        progressBar -edit -pr $mtif nc5_pb2;
        text -edit -label $spc2 nc5_av2;
    }

   $control = alive($pid);
    pause -sec 1;
}


$control = true;

while ($control)
{
    $control = alive($pid);
    pause -sec 1;
}

iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC2;



//////////////////////  Seconde Passe  ////////////////////////////

//// redaction du shell script

$pathShell = $pathproj+"shellcmdpatis2.sh";

$fileId = fopen($pathShell,"w");
fprint($fileId,"#!/bin/bash\n");
```

```
    int $reso2 = `optionMenuGrp -query -value nc4_tip2`;
    fprint($fileId,"Pastis      "+$pathproj+"      Key-Rel-All-Cples-Filtr-SsEch      "+$reso2+"
FiltreOnlyDupl=1 MkF=MkPas2 NbMinPtsExp=2");
    fprint($fileId,"exit");
    fclose($fileId);

    //// Assurer son accessibilité

    system("chmod 777 ./shellcmdpatis2.sh");

    //// Lancement :


    $pid = exec("./shellcmdpatis2.sh");

    progressBar -edit -maxValue $slnb nc5_pb3;

    $mtif=0;

    $control = true;

    while (($mtif<$slnb)&&($control))
    {

        string $dirList[];
        $mtif=-1;

        $pipe = popen( "ls -l ./Pastis/*.tif", "r" );
        while ( !feof( $pipe ) ) {
            $dirList[size( $dirList )] = fgetline( $pipe );
            $mtif=$mtif+1;
        }

        pclose( $pipe );

        $mtif = $mtif - $slnb;

        $spc2 = " "+$mtif+"/"+$slnb;


        progressBar -edit -pr $mtif nc5_pb3;
        text -edit -label $spc2 nc5_av3;

        $control = alive($pid);
        pause -sec 1;
    }

    $control = true;

    while($control)
    {
        $control = alive($pid);
        pause -sec 1;
    }


    $spc2 = " 0/"+$slnb;
    text -edit -label $spc2 nc5_av4;

    $pid = exec("make all -f MkPas2 -j"+$WProc);

    ////////////////////////  Analyse de l'avancement Point homologue passe 2


    progressBar -edit -maxValue $slnb nc5_pb4;

    $mtif=0;
    $imfinal="no";

    $lastdat="ini";
    $control = true;

    while (($mtif<$slnb)&&($control))
    {
        string $ldirList[];

        string $lnum[];
        string $num;
        $mtif=-1;


        $pipe3 = popen( "ls -l ./Pastis/*/*.result", "r" );
```

```
        while ( !feof( $pipe3 ) ) {

            $lastdat1 = fgetline( $pipe3 );

            if($lastdat1!=""){

               string $ltestreso[];

                $ltestreso = stringToStringArray($lastdat1, "_");
                $testreso = endString($ltestreso[0],3);

               if ($testreso!=$res) {
                    $lastdat = fgetline( $pipe3 );
                    $Reso3Dsift = endString($ltestreso[0],2);
               }
            }

        }

        pclose( $pipe3 );

        $lnum = stringToStringArray($lastdat, "_");


        if (size($lnum)>=10){

            $num = $lnum[2]+"_"+$lnum[3]+"_"+$lnum[4];
            string $imft =  $lnum[10];

            textScrollList -edit -da listnumimg;
            textScrollList -edit -si $num listnumimg;

            $listsel = `textScrollList -query -sii listnumimg`;

            $mtif = $listsel[0];


           if ($mtif ==  $slnb)
            {

               if ($imft!=$imfinal)
                {
                    // on y est presque mais pas encore
                    $imfinal = $imft;
                    $mtif = $mtif - 1;
                }
            }

            $spc2 = " "+$mtif+"/"+$slnb;
            progressBar -edit -pr $mtif nc5_pb4;
            text -edit -label $spc2 nc5_av4;
        }


        $control = alive($pid);
        pause -sec 1;
    }

    while($control)
    {
        $control = alive($pid);
        pause -sec 1;
    }

    $spc2 = " "+$slnb+"/"+$slnb;
    progressBar -edit -pr $slnb nc5_pb4;
    text -edit -label $spc2 nc5_av4;

    iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC3;

    button -edit -enable 1 -command"next(1)" nc5_ct;


}
```

c) TraitApero.mel :

```
////////////////////////////////////////////////////////////////////////
```

```
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :              Aymeric GODET
////
//// Date :                10/09/10
////
//// Presentation :        Les fonctions du traitement du chantier par APERO
//// Modif seul tele a faire
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////////////////////
//       Redaction des fichiers de paramétrages des calibrations et lancement d'APERO
////////////////////////////////////////////////////////////////////////////

global proc TraitApero()
{

    global string $lfcam[];
    global string $lfcamr[];
    global string $Reso3Dsift;
    global string $pathproj;
    //$pathproj = "/home/aymeric/Bureau/testmv/";

    $pbsize = size($lfcam)*13;
    progressBar -edit -maxValue $pbsize nc7_pb1;


    button -edit -enable 0 nc7_bparam1;
    button -edit -enable 0 nc7_bstartChant;
    button -edit -enable 0 nc7_breit;
    button -edit -enable 0 nc7_bparam2;
    button -edit -enable 0 nc7_bchantreit;
    button -edit -enable 0 nc7_b3Dsift;
    text -edit -visible 0 nc7_rescal;
    text -edit -visible 0 nc7_reschant;
    text -edit -label "0%" nc7_av2;
    progressBar -edit -pr 0 nc7_pb2;



    ///  Pour chaque objectif nous créons un fichier de paramètre pour la calibration ///


    for ( $i=0; $i < size($lfcam); $i++ )
    {

        $jnum = endString($lfcam[$i],3);

        int $intjnum = $jnum;


        if (($intjnum>50)&&($i>1))
        {
            //Nous sommes dans le cas de teleobjectif potentielement instable --> Traitement dans PbApero.mel
            CalTele($jnum);
        }
        else
        {

            $pathShell = $pathproj+"Apero-cal"+$lfcam[$i]+".xml";
            $fileId = fopen($pathShell,"w");

            fprint($fileId,"<Global\n");
            fprint($fileId,"Subst=\"@$#1\"\n");
            fprint($fileId,"NameDecl=\"@$#1\"\n");
            fprint($fileId,">\n");
            fprint($fileId,"<ParamApero>\n");
            fprint($fileId,"<SectionBDD_Observation>\n");
            fprint($fileId,"<BDD_PtsLiaisons>\n");
            fprint($fileId,"<Id>    Id_Pastis_Hom  </Id> \n");
            fprint($fileId,"<KeySet> Key-Set-HomolPastisBin  </KeySet> \n");
            fprint($fileId,"<KeyAssoc>  Key-Assoc-CpleIm2HomolPastisBin   </KeyAssoc>\n");
            fprint($fileId,"<UseAsPtMultiple> true </UseAsPtMultiple>\n");
            fprint($fileId,"</BDD_PtsLiaisons>\n");
            fprint($fileId,"</SectionBDD_Observation>\n");
            fprint($fileId,"<SectionInconnues>\n");
```

```
            fprint($fileId,"<CalibrationCameraInc>\n");

            fprint($fileId,"<Name> TheKeyCalib_"+$lfcam[$i]+"</Name>\n");

            fprint($fileId,"<CalValueInit>\n");
            fprint($fileId,"<CalFromFileExtern>\n");


            fprint($fileId,"<NameFile>  Cal-"+$jnum+"-Init.xml    </NameFile>");

            fprint($fileId,"<NameTag>    CalibrationInternConique </NameTag>\n");
            fprint($fileId,"</CalFromFileExtern>\n");
            fprint($fileId,"</CalValueInit>\n");
            fprint($fileId,"</CalibrationCameraInc>\n");
            fprint($fileId,"<PoseCameraInc>\n");

            // detection de l'image arbitraire fixee

            $ai = `textScrollList -query -ai nc6_call`;
            $imgfixe = $ai[0];
            string $patimgcal = "";


            // Nous selectionnons ici la derniere image convenable car la premiere n'est pas necessairement la bonne

            for ( $j=0; $j < size($ai); $j++ )
            {
                if (startString($ai[$j],4)==$lfcam[$i])
                {
                    $imgfixe = $ai[$j];

                    $limgcal = stringToStringArray($imgfixe, "_");

                    $patimgcal = $patimgcal+$limgcal[2]+"|";
                }
            }
            $nbstr = size($patimgcal)-6;

            fprint($fileId,"<PatternName>"+$imgfixe+"</PatternName>\n");

            fprint($fileId,"<CalcNameCalib>  TheKeyCalib_"+$lfcam[$i]+" </CalcNameCalib> \n");


            fprint($fileId,"<PosValueInit>\n");
            fprint($fileId,"<PosId> ### </PosId>\n");
            fprint($fileId,"</PosValueInit>\n");
            fprint($fileId,"</PoseCameraInc>\n");
            fprint($fileId,"<PoseCameraInc>\n");

            $patimgcal                                                                                    =
startString($imgfixe,9)+"("+startString($patimgcal,$nbstr)+")_MpDcraw8B_GB.tif";

            fprint($fileId,"<PatternName>"+$patimgcal+"</PatternName>\n");
            fprint($fileId,"<AutoRefutDupl> true </AutoRefutDupl>\n");

            fprint($fileId,"<CalcNameCalib>TheKeyCalib_"+$lfcam[$i]+"</CalcNameCalib>\n");

            fprint($fileId,"<PosesDeRattachement>  0  </PosesDeRattachement>\n");
            fprint($fileId,"<InitNow> false </InitNow>\n");
            fprint($fileId,"<MEP_SPEC_MST>\n");
            fprint($fileId,"<Show> true </Show>\n");
            fprint($fileId,"</MEP_SPEC_MST>\n");
            fprint($fileId,"<PosValueInit>\n");
            fprint($fileId,"<PoseFromLiaisons>\n");
            fprint($fileId,"<LiaisonsInit>\n");
            fprint($fileId,"<NameCam> ###   </NameCam>\n");
            fprint($fileId,"<IdBD> Id_Pastis_Hom  </IdBD>\n");
            fprint($fileId,"</LiaisonsInit>\n");
            fprint($fileId,"</PoseFromLiaisons>\n");
            fprint($fileId,"</PosValueInit>\n");
            fprint($fileId,"</PoseCameraInc>\n");
            fprint($fileId,"</SectionInconnues>\n");
            fprint($fileId,"<SectionChantier>\n");
            fprint($fileId,"<DirectoryChantier> ThisDir\n");
            fprint($fileId,"</DirectoryChantier>\n");
            fprint($fileId,"</SectionChantier>\n");
            fprint($fileId,"<SectionSolveur>\n");
            fprint($fileId,"<ModeResolution> eSysPlein </ModeResolution>\n");
            fprint($fileId,"</SectionSolveur>\n");
            fprint($fileId,"<SectionCompensation>\n");
            fprint($fileId,"<EtapeCompensation>\n");
            fprint($fileId,"<IterationsCompensation>\n");
            fprint($fileId,"<Pose2Init>\n");
```

```
fprint($fileId,"<ProfMin> [2,3,4,5] </ProfMin>\n");
fprint($fileId,"<Show> true </Show>\n");
fprint($fileId,"</Pose2Init>\n");
fprint($fileId,"<SectionContraintes>\n");
fprint($fileId,"<ContraintesCamerasInc>\n");
fprint($fileId,"<Val> eLiberteFocale_0  </Val>\n");
fprint($fileId,"<Val> eLib_PP_CD_00     </Val>\n");
fprint($fileId,"<Val> eLiberte_DR0      </Val>\n");

if ($intjnum <19)
{
    fprint($fileId,"<Val> eLiberte_Dec0      </Val>\n");
    fprint($fileId,"<Val> eLiberteParamDeg_0 </Val>\n");
}

fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"<ContraintesPoses>\n");
fprint($fileId,"<NamePose>   0 </NamePose>\n");
fprint($fileId,"<Val>      ePoseFigee   </Val>\n");
fprint($fileId,"</ContraintesPoses>\n");
fprint($fileId,"<ContraintesPoses>\n");
fprint($fileId,"<NamePose>   1     </NamePose>\n");
fprint($fileId,"<Val>      ePoseBaseNormee   </Val>\n");
fprint($fileId,"<PoseRattachement>   0 </PoseRattachement>\n");
fprint($fileId,"</ContraintesPoses>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
fprint($fileId,"<SectionObservations>\n");
fprint($fileId,"<ObsLiaisons>\n");
fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
fprint($fileId,"<Pond>\n");
fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
fprint($fileId,"<NbMax>   100    </NbMax>\n");
fprint($fileId,"<EcartMax> 15 </EcartMax>\n");
fprint($fileId,"<SigmaPond> 5 </SigmaPond>\n");
fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
fprint($fileId,"</Pond>\n");
fprint($fileId,"</ObsLiaisons>\n");
fprint($fileId,"</SectionObservations>\n");
fprint($fileId,"</EtapeCompensation>\n");

if ($intjnum<19)
{
    fprint($fileId,"<EtapeCompensation>\n");
    fprint($fileId,"<IterationsCompensation>\n");
    fprint($fileId,"<SectionContraintes>\n");
    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLib_PP_CD_11     </Val>\n");
    fprint($fileId,"<Val> eLiberte_DR3      </Val>\n");
    fprint($fileId,"</ContraintesCamerasInc>\n");
    fprint($fileId,"</SectionContraintes>\n");
    fprint($fileId,"</IterationsCompensation>\n");
    fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
    fprint($fileId,"<IterationsCompensation>\n");
    fprint($fileId,"<SectionContraintes>\n");
    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLiberteFocale_1  </Val>\n");
    fprint($fileId,"<Val> eLiberte_DR5  </Val>\n");
    fprint($fileId,"</ContraintesCamerasInc>\n");
    fprint($fileId,"</SectionContraintes>\n");
    fprint($fileId,"</IterationsCompensation>\n");

    fprint($fileId,"<IterationsCompensation>\n");
    fprint($fileId,"<SectionContraintes>\n");
    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLiberteParamDeg_5  </Val>\n");
    fprint($fileId,"<Val>  eLiberte_Dec2  </Val>\n");
    fprint($fileId,"</ContraintesCamerasInc>\n");
    fprint($fileId,"</SectionContraintes>\n");
    fprint($fileId,"</IterationsCompensation>\n");

    fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
    fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");

    fprint($fileId,"<SectionObservations>\n");
    fprint($fileId,"<ObsLiaisons>\n");
    fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
    fprint($fileId,"<Pond>\n");
    fprint($fileId,"<ModePonderation>  eL1Secured </ModePonderation>\n");
    fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
    fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
    fprint($fileId,"<NbMax>   100    </NbMax>\n");
```

```
        fprint($fileId,"<EcartMax> 10 </EcartMax>\n");
        fprint($fileId,"<SigmaPond> 4 </SigmaPond>\n");
        fprint($fileId,"</Pond>\n");
        fprint($fileId,"</ObsLiaisons>\n");
        fprint($fileId,"</SectionObservations>\n");
    }
    else
    {
        fprint($fileId,"<EtapeCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberte_DR1      </Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberte_DR2      </Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberte_DR3      </Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberteFocale_1  </Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLib_PP_CD_Lies      </Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLib_PP_CD_11      </Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
        fprint($fileId,"<SectionObservations>\n");
        fprint($fileId,"<ObsLiaisons>\n");
        fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
        fprint($fileId,"<Pond>\n");
        fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
        fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
        fprint($fileId,"<NbMax>   100    </NbMax>\n");
        fprint($fileId,"<EcartMax> 15 </EcartMax>\n");
        fprint($fileId,"<SigmaPond> 3 </SigmaPond>\n");
        fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
        fprint($fileId,"</Pond>\n");
        fprint($fileId,"</ObsLiaisons>\n");
        fprint($fileId,"</SectionObservations>\n");
        fprint($fileId,"</EtapeCompensation>\n");
        fprint($fileId,"<EtapeCompensation>\n");
        fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
        fprint($fileId,"<SectionObservations>\n");
        fprint($fileId,"<ObsLiaisons>\n");
        fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
        fprint($fileId,"<Pond>\n");
        fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
        fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
        fprint($fileId,"<NbMax>   100    </NbMax>\n");
        fprint($fileId,"<EcartMax> 15 </EcartMax>\n");
        fprint($fileId,"<SigmaPond> 1.5 </SigmaPond> \n");
        fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
        fprint($fileId,"</Pond>\n");
        fprint($fileId,"</ObsLiaisons>\n");
        fprint($fileId,"</SectionObservations>\n");
```

```
            }

            fprint($fileId,"<SectionExport>\n");
            fprint($fileId,"<ExportCalib>\n");

            fprint($fileId,"<KeyAssoc>  Auto-Calib-"+$jnum+".xml  </KeyAssoc>");

            fprint($fileId,"<KeyIsName> true </KeyIsName>\n");
            fprint($fileId,"</ExportCalib>\n");
            fprint($fileId,"</SectionExport>\n");
            fprint($fileId,"</EtapeCompensation>\n");
            fprint($fileId,"</SectionCompensation>\n");
            fprint($fileId,"</ParamApero>\n");
            fprint($fileId,"</Global>\n");

            fclose($fileId);

        }

        $apcal      =       exec("Apero       "+$pathproj+"Apero-cal"+$lfcam[$i]+".xml       >
ResultCal"+$jnum+".txt");

        $evol = true;


        while($evol)
        {

            system("grep \"End Iter\" ResultCal"+$jnum+".txt > evolCal.txt");


            $fo = $pathproj+"evolCal.txt";

            $fileId=`fopen $fo "r"`;

            $ievol=0;

            while ( !`feof $fileId` )
            {
                $nextLine = `fgetline $fileId`;
                $ievol=$ievol+1;
            }
            fclose $fileId;

            $ievol = $ievol + 13 * $i;

            $levol = $ievol + "/" + 13 * size($lfcam);

            progressBar -edit -pr $ievol nc7_pb1;
            text -edit -label $levol nc7_av1;

            $evol = alive($apcal);
            pause -sec 1;
        }

        system("grep \"|  |   RESIDU  LIAISON  MOYENS\" ResultCal"+endString($lfcam[$i],3)+".txt
>res"+$i+".txt");


        $fo = $pathproj+"res"+$i+".txt";

        $fileId=`fopen $fo "r"`;
        string $nextLine = `fgetline $fileId`;

        $lres="";

        while ( !`feof $fileId` )
        {
            $nextLine = `fgetline $fileId`;
            if ($nextLine!="")
            {
                $lres=$nextLine;
            }
        }

        $tabres=stringToStringArray($lres," ");
        $lfcamr[$i]=$tabres[6];

        fclose $fileId;

        $lnew="";

        if ($i==0)
```

```
        {
            $lnew = "Residus : | "+startString($lfcamr[0],4)+" | ";
        }else
        {
            $lold = `text -query -label nc7_rescal`;
            $lnew = $lold+" "+startString($lfcamr[$i],4)+" | ";
        }
        text -edit -label $lnew nc7_rescal;
        text -edit -visible 1 nc7_rescal;
    }
    button -edit -enable 1 nc7_bparam1;

    $tot = 13 * size($lfcam);
    $ltot = $tot+"/"+$tot;

    progressBar -edit -pr $tot nc7_pb1;
    text -edit -label $ltot nc7_av1;



    progressBar -edit -maxValue 12 nc7_pb2;

    button -edit -enable 1 nc7_bstartChant;
    button -edit -enable 1 nc7_breit;



    iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC4;

}

////////////////////////////////////////////////////////////////////////
//      Paramètrage et calcul de l'aerotriangulation global
////////////////////////////////////////////////////////////////////////

global proc AperoChant() {


    global string $lfcam[];

    global string $Reso3Dsift;
    global string $pathproj;


    button -edit -enable 0 nc7_bstartChant;
    button -edit -enable 0 nc7_breit;
    button -edit -enable 0 nc7_bparam1;
    button -edit -enable 0 nc7_bparam2;
    button -edit -enable 0 nc7_bchantreit;
    button -edit -enable 0 nc7_b3Dsift;
    text -edit -visible 0 nc7_reschant;

    $pathShell = $pathproj+"Apero-Chantier.xml";
    $fileId = fopen($pathShell,"w");


    fprint($fileId,"<Global\n");
    fprint($fileId,"Subst=\"@$#1\"\n");
    fprint($fileId,"NameDecl=\"@$#1\"\n");
    fprint($fileId,">\n");
    fprint($fileId,"<ParamApero>\n");
    fprint($fileId,"<SectionBDD_Observation>\n");
    fprint($fileId,"<BDD_PtsLiaisons>\n");
    fprint($fileId,"<Id>    Id_Pastis_Hom  </Id>\n");
    fprint($fileId,"<KeySet> Key-Set-HomolPastisBin  </KeySet>\n");
    fprint($fileId,"<KeyAssoc>  Key-Assoc-CpleIm2HomolPastisBin   </KeyAssoc>\n");
    fprint($fileId,"<UseAsPtMultiple> true </UseAsPtMultiple>\n");
    fprint($fileId,"</BDD_PtsLiaisons>\n");
    fprint($fileId,"<BDD_Orient >\n");
    fprint($fileId,"<Id> Key-Ori-Init </Id>\n");
    fprint($fileId,"<KeySet>  Key-Set-All-OrInit </KeySet>\n");
    fprint($fileId,"<KeyAssoc>  Key-Assoc-Im2OrInit </KeyAssoc>\n");
    fprint($fileId,"</BDD_Orient>\n");
    fprint($fileId,"</SectionBDD_Observation>\n");
    fprint($fileId,"<SectionInconnues>\n");

    //// Creation des clés des caméra du chantier


    string $raz[];
    string $camuse[];

    $camuse = $raz;
```

```
    for ( $i=0; $i < size($lfcam); $i++ )
    {
        $testcal = false;
        $ai = `textScrollList -query -ai nc6_glol`;
        for ( $j=0; $j < size($ai); $j++ )
        {
            if (startString($ai[$j],4)==$lfcam[$i])
            {
                $testcal = true;
            }
        }

        if ($testcal)
        {
            $camuse[size($camuse)]=$lfcam[$i];
        }

    }

    for ( $i=0; $i < size($lfcam); $i++ )
    {
        $testcal = false;
        $ai = `textScrollList -query -ai nc6_locl`;
        for ( $j=0; $j < size($ai); $j++ )
        {
            if (startString($ai[$j],4)==$lfcam[$i])
            {
                $testcal = true;
            }
        }

        $testnolisted = true;

        for ($j=0; $j < size($camuse) ; $j++ )
        {
            if ($lfcam[$i]==$camuse[$j])
            {
                $testnolisted = false;
            }

        }

        if (($testcal)&&($testnolisted))
        {
            $camuse[size($camuse)]=$lfcam[$i];
        }

    }



    for ( $i=0; $i < size($camuse); $i++ )
    {

        $jnum = endString($camuse[$i],3);

        fprint($fileId,"<CalibrationCameraInc>\n");

        fprint($fileId,"<Name> TheKeyCalib_"+endString($camuse[$i],3)+"</Name>\n");

        fprint($fileId,"<CalValueInit>\n");
        fprint($fileId,"<CalFromFileExtern>\n");

        fprint($fileId,"<NameFile>  Auto-Calib-"+$jnum+".xml  </NameFile>");

        fprint($fileId,"<NameTag>    CalibrationInternConique </NameTag>\n");
        fprint($fileId,"</CalFromFileExtern>\n");
        fprint($fileId,"</CalValueInit>\n");
        fprint($fileId,"</CalibrationCameraInc>\n");

    }

////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

    ///// Fixation de la première image du chantier

    fprint($fileId,"<PoseCameraInc>\n");
```

```
    $aiglo = `textScrollList -query -ai nc6_glol`;
    $fcamfix = endString(startString($aiglo[0],4),3);
    $descripteur = endString(startString($aiglo[0],8),3);


    fprint($fileId,"<PatternName>"+$aiglo[0]+"</PatternName>\n");
    fprint($fileId,"<CalcNameCalib>  TheKeyCalib_"+$fcamfix+"</CalcNameCalib>\n");

    fprint($fileId,"<PosValueInit>\n");
    fprint($fileId,"<PosId> ### </PosId>\n");
    fprint($fileId,"</PosValueInit>\n");
    fprint($fileId,"</PoseCameraInc>\n");


    /////// Generation des blocs images par focale dans global

    for ( $i=0; $i < size($lfcam); $i++ )
    {


        $imgdeb = "";
        string $limgglo[];
        $patimgglo = "";


        for ( $j=0; $j < size($aiglo); $j++ )
        {
            if (startString($aiglo[$j],4)==$lfcam[$i])
            {
                $imgdeb = $aiglo[$j];

                $limgglo = stringToStringArray($imgdeb, "_");

                $patimgglo = $patimgglo+$limgglo[2]+"|";
            }
        }

        $nbstr = size($patimgglo)-1;
        $patimgglo                                                                                    =
startString($imgdeb,9)+"("+startString($patimgglo,$nbstr)+")_MpDcraw8B_GB.tif";


        if ($nbstr>3)
        {

            fprint($fileId,"<PoseCameraInc>\n");
            fprint($fileId,"<PatternName>"+$patimgglo+"</PatternName>\n");

            fprint($fileId,"<AutoRefutDupl> true </AutoRefutDupl>\n");


fprint($fileId,"<CalcNameCalib>TheKeyCalib_"+endString($lfcam[$i],3)+"</CalcNameCalib>\n");

            fprint($fileId,"<PosesDeRattachement>  0  </PosesDeRattachement>\n");
            fprint($fileId,"<InitNow> false </InitNow>\n");
            fprint($fileId,"<MEP_SPEC_MST>\n");
            fprint($fileId,"<Show> true </Show>\n");
            fprint($fileId,"</MEP_SPEC_MST>\n");
            fprint($fileId,"<PosValueInit>\n");
            fprint($fileId,"<PoseFromLiaisons>\n");
            fprint($fileId,"<LiaisonsInit>\n");
            fprint($fileId,"<NameCam> ###   </NameCam>\n");
            fprint($fileId,"<IdBD> Id_Pastis_Hom  </IdBD>\n");
            fprint($fileId,"</LiaisonsInit>\n");
            fprint($fileId,"</PoseFromLiaisons>\n");
            fprint($fileId,"</PosValueInit>\n");
            fprint($fileId,"</PoseCameraInc>\n");
        }


    }


    /////// Generation des blocs images par focale dans local


    $ailoc = `textScrollList -query -ai nc6_locl`;

    for ( $i=0; $i < size($lfcam); $i++ )
    {


        $imgdeb = "";
```

```
        string $limgloc[];
        $patimgloc = "";


        for ( $j=0; $j < size($ailoc); $j++ )
        {
            if (startString($ailoc[$j],4)==$lfcam[$i])
            {
                $imgdeb = $ailoc[$j];

                $limgloc = stringToStringArray($imgdeb, "_");

                $patimgloc = $patimgloc+$limgloc[2]+"|";
            }
        }

        $nbstr = size($patimgloc)-1;
        $patimgloc                                                                                    =
startString($imgdeb,9)+"("+startString($patimgloc,$nbstr)+")_MpDcraw8B_GB.tif";


        if ($nbstr>3)
        {

            fprint($fileId,"<PoseCameraInc>\n");
            fprint($fileId,"<PatternName>"+$patimgloc+"</PatternName>\n");

            fprint($fileId,"<AutoRefutDupl> true </AutoRefutDupl>\n");


fprint($fileId,"<CalcNameCalib>TheKeyCalib_"+endString($lfcam[$i],3)+"</CalcNameCalib>\n");

            fprint($fileId,"<PosesDeRattachement>  0  </PosesDeRattachement>\n");
            fprint($fileId,"<InitNow> false </InitNow>\n");
            fprint($fileId,"<MEP_SPEC_MST>\n");
            fprint($fileId,"<Show> true </Show>\n");
            fprint($fileId,"</MEP_SPEC_MST>\n");
            fprint($fileId,"<PosValueInit>\n");
            fprint($fileId,"<PoseFromLiaisons>\n");
            fprint($fileId,"<LiaisonsInit>\n");
            fprint($fileId,"<NameCam> ###   </NameCam>\n");
            fprint($fileId,"<IdBD> Id_Pastis_Hom  </IdBD>\n");
            fprint($fileId,"</LiaisonsInit>\n");
            fprint($fileId,"</PoseFromLiaisons>\n");
            fprint($fileId,"</PosValueInit>\n");
            fprint($fileId,"</PoseCameraInc>\n");
        }


    }

    fprint($fileId,"</SectionInconnues>\n");
    fprint($fileId,"<SectionChantier>\n");
    fprint($fileId,"<DirectoryChantier> ThisDir\n");
    fprint($fileId,"</DirectoryChantier>\n");
    fprint($fileId,"</SectionChantier>\n");
    fprint($fileId,"<SectionSolveur>\n");
    fprint($fileId,"<ModeResolution> eSysPlein </ModeResolution>\n");
    fprint($fileId,"</SectionSolveur>\n");
    fprint($fileId,"<SectionCompensation>\n");
    fprint($fileId,"<EtapeCompensation>\n");
    fprint($fileId,"<IterationsCompensation>\n");
    fprint($fileId,"<Pose2Init>\n");

    $prof = "[";

    $maxprof = 3*size($aiglo)/8 + 3;

    for ( $j=1; $j < $maxprof; $j++ )
    {
        $prof = $prof + 2*$j + ",";
    }

    $prof = startString($prof,size($prof)-1);

    fprint($fileId,"<ProfMin> "+$prof+"] </ProfMin>\n");


    fprint($fileId,"<Show> true </Show>\n");
    fprint($fileId,"</Pose2Init>\n");

// Les contraintes changent s'il y a un fisheye dans le chantier. Nous détectons sa présence ici
    fprint($fileId,"<SectionContraintes>\n");
```

```
int $fish = endString($lfcam[0],3);
$patfoc = "";

if ($fish<20)
{
// Fisheye
    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLiberteFocale_0  </Val>\n");
    fprint($fileId,"<Val> eLib_PP_CD_00     </Val>\n");
    fprint($fileId,"<Val> eLiberte_DR0      </Val>\n");

        fprint($fileId,"<Val> eLiberte_Dec0      </Val>\n");
        fprint($fileId,"<Val> eLiberteParamDeg_0 </Val>\n");

fprint($fileId,"<PatternNameApply>                      TheKeyCalib_"+endString($lfcam[0],3)+"
</PatternNameApply>\n");

    fprint($fileId,"</ContraintesCamerasInc>\n");



if (size($lfcam)>1)
{
// les autres
    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLiberteFocale_0  </Val>\n");
    fprint($fileId,"<Val> eLib_PP_CD_00     </Val>\n");
    fprint($fileId,"<Val> eLiberte_DR0      </Val>\n");


$patfoc = endString($lfcam[1],3);

if (size($lfcam)>2)
{
for ( $i=2; $i < size($lfcam); $i++ )
    {
$patfoc = $patfoc +"|"+endString($lfcam[$i],3);
    }
}

fprint($fileId,"<PatternNameApply> TheKeyCalib_("+$patfoc+") </PatternNameApply>\n");

    fprint($fileId,"</ContraintesCamerasInc>\n");
}

}
else
{

// Dans ce cas nous n'avons pas besoin de PatternNameApply (même modèle de distorsion)

    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLiberteFocale_0  </Val>\n");
    fprint($fileId,"<Val> eLib_PP_CD_00     </Val>\n");
    fprint($fileId,"<Val> eLiberte_DR0      </Val>\n");
    fprint($fileId,"</ContraintesCamerasInc>\n");
}



    fprint($fileId,"<ContraintesPoses>\n");
    fprint($fileId,"<NamePose>   0 </NamePose>\n");
    fprint($fileId,"<Val>      ePoseFigee   </Val>\n");
    fprint($fileId,"</ContraintesPoses>\n");
    fprint($fileId,"<ContraintesPoses>\n");
    fprint($fileId,"<NamePose>   1     </NamePose>\n");
    fprint($fileId,"<Val>      ePoseBaseNormee   </Val>\n");
    fprint($fileId,"<PoseRattachement>   0 </PoseRattachement>\n");
    fprint($fileId,"</ContraintesPoses>\n");
    fprint($fileId,"</SectionContraintes>\n");
    fprint($fileId,"</IterationsCompensation>\n");

    fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");

    fprint($fileId,"<SectionObservations>\n");
    fprint($fileId,"<ObsLiaisons>\n");
    fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
    fprint($fileId,"<Pond>\n");
    fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
    fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
    fprint($fileId,"<NbMax>   100    </NbMax>\n");
    fprint($fileId,"<EcartMax> 30 </EcartMax>\n");
```

```
    fprint($fileId,"<SigmaPond> 5 </SigmaPond>\n");
    fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
    fprint($fileId,"</Pond>\n");
    fprint($fileId,"</ObsLiaisons>\n");
    fprint($fileId,"</SectionObservations>\n");
    fprint($fileId,"</EtapeCompensation>\n");

        fprint($fileId,"<EtapeCompensation>\n");
   if ($fish<20)
{     fprint($fileId,"<IterationsCompensation>\n");


        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLib_PP_CD_11     </Val>\n");
        fprint($fileId,"<Val> eLiberte_DR3      </Val>\n");
       fprint($fileId,"<PatternNameApply>               TheKeyCalib_"+endString($lfcam[0],3)+"
</PatternNameApply>\n");
       fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");

       if ($patfoc!="")
       {
        fprint($fileId,"<IterationsCompensation>\n");
       fprint($fileId,"<SectionContraintes>\n");
       fprint($fileId,"<ContraintesCamerasInc>\n");
       fprint($fileId,"<Val> eLiberte_DR1</Val>\n");
       fprint($fileId,"<PatternNameApply> TheKeyCalib_("+$patfoc+") </PatternNameApply>\n");
       fprint($fileId,"</ContraintesCamerasInc>\n");
       fprint($fileId,"</SectionContraintes>\n");
       fprint($fileId,"</IterationsCompensation>\n");
       }
}
else
{

        fprint($fileId,"<IterationsCompensation>\n");
       fprint($fileId,"<SectionContraintes>\n");
       fprint($fileId,"<ContraintesCamerasInc>\n");
       fprint($fileId,"<Val> eLiberte_DR1</Val>\n");
       fprint($fileId,"</ContraintesCamerasInc>\n");
       fprint($fileId,"</SectionContraintes>\n");
       fprint($fileId,"</IterationsCompensation>\n");
}


   if ($fish<20)
{
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberteFocale_1  </Val>\n");
        fprint($fileId,"<Val> eLiberte_DR5  </Val>\n");
       fprint($fileId,"<PatternNameApply>               TheKeyCalib_"+endString($lfcam[0],3)+"
</PatternNameApply>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
       if ($patfoc!="")
       {
       fprint($fileId,"<ContraintesCamerasInc>\n");
       fprint($fileId,"<Val> eLiberte_DR2</Val>\n");
       fprint($fileId,"<PatternNameApply> TheKeyCalib_("+$patfoc+") </PatternNameApply>\n");
       fprint($fileId,"</ContraintesCamerasInc>\n");
       }
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
} else
{
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
       fprint($fileId,"<ContraintesCamerasInc>\n");
       fprint($fileId,"<Val> eLiberte_DR2</Val>\n");
       fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
}

   if ($fish<20)
{
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberteParamDeg_5  </Val>\n");
        fprint($fileId,"<Val>  eLiberte_Dec2  </Val>\n");
```

```
        fprint($fileId,"<PatternNameApply>               TheKeyCalib_"+endString($lfcam[0],3)+"
</PatternNameApply>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
              if ($patfoc!="")
        {
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberte_DR3</Val>\n");
        fprint($fileId,"<PatternNameApply> TheKeyCalib_("+$patfoc+") </PatternNameApply>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        }
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
}
else
{
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberte_DR3</Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
}

   if ((($fish<20)&&($patfoc!="")))
{
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberteFocale_1</Val>\n");
        fprint($fileId,"<PatternNameApply> TheKeyCalib_("+$patfoc+") </PatternNameApply>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLib_PP_CD_Lies</Val>\n");
        fprint($fileId,"<PatternNameApply> TheKeyCalib_("+$patfoc+") </PatternNameApply>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
}
//else if ($patfoc!="")
else if ($fish>=20)
{
        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLiberteFocale_1</Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");

        fprint($fileId,"<IterationsCompensation>\n");
        fprint($fileId,"<SectionContraintes>\n");
        fprint($fileId,"<ContraintesCamerasInc>\n");
        fprint($fileId,"<Val> eLib_PP_CD_Lies</Val>\n");
        fprint($fileId,"</ContraintesCamerasInc>\n");
        fprint($fileId,"</SectionContraintes>\n");
        fprint($fileId,"</IterationsCompensation>\n");
}


 fprint($fileId,"<IterationsCompensation>\n");
 fprint($fileId,"</IterationsCompensation>\n");

 fprint($fileId,"<IterationsCompensation>\n");
  fprint($fileId,"</IterationsCompensation>\n");


        fprint($fileId,"<SectionObservations>\n");
        fprint($fileId,"<ObsLiaisons>\n");
        fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
        fprint($fileId,"<Pond>\n");
        fprint($fileId,"<ModePonderation>  eL1Secured </ModePonderation>\n");
        fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
        fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
        fprint($fileId,"<NbMax>   100    </NbMax>\n");
        fprint($fileId,"<EcartMax> 10 </EcartMax>\n");
        fprint($fileId,"<SigmaPond> 4 </SigmaPond>\n");
        fprint($fileId,"</Pond>\n");
        fprint($fileId,"</ObsLiaisons>\n");
        fprint($fileId,"</SectionObservations>\n");
```

```
        fprint($fileId,"</EtapeCompensation>\n");

        fprint($fileId,"<EtapeCompensation>\n");
        fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
        fprint($fileId,"<SectionObservations>\n");
        fprint($fileId,"<ObsLiaisons>\n");
        fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
        fprint($fileId,"<Pond>\n");
        fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
        fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
        fprint($fileId,"<NbMax>   100    </NbMax>\n");
        fprint($fileId,"<EcartMax> 15 </EcartMax>\n");
        fprint($fileId,"<SigmaPond> 1.5 </SigmaPond>\n");
        fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
        fprint($fileId,"</Pond>\n");
        fprint($fileId,"</ObsLiaisons>\n");
        fprint($fileId,"</SectionObservations>\n");
        fprint($fileId,"<SectionExport>\n");

        ////////////////////////////////

if ($fish<20)
{
        fprint($fileId,"<ExportPose>\n");
        fprint($fileId,"<PatternSel> "+$lfcam[0]+"(.*).tif </PatternSel>\n");
        fprint($fileId,"<KeyAssoc>  Key-Assoc-Im2OrFinale </KeyAssoc>\n");
        fprint($fileId,"<AddCalib>  true </AddCalib>\n");
        fprint($fileId,"<NbVerif>  10 </NbVerif>\n");
        fprint($fileId,"<TolWhenVerif> 1e-3 </TolWhenVerif>\n");
        fprint($fileId,"<FileExtern> Ori-F/grid-"+$lfcam[0]+".xml </FileExtern>\n");
        fprint($fileId,"</ExportPose>\n");

if ($patfoc!="")
        {
        fprint($fileId,"<ExportPose>\n");
        fprint($fileId,"<PatternSel> F("+$patfoc+")(.*).tif </PatternSel>\n");
        fprint($fileId,"<KeyAssoc>  Key-Assoc-Im2OrFinale </KeyAssoc>\n");
        fprint($fileId,"<AddCalib>  true </AddCalib>\n");
        fprint($fileId,"<NbVerif>  10 </NbVerif>\n");
        fprint($fileId,"<TolWhenVerif> 1e-3 </TolWhenVerif>\n");
        fprint($fileId,"</ExportPose>\n");
        }

        fprint($fileId,"<ExportCalib>\n");
        fprint($fileId,"<KeyAssoc> Ori-F/grid-"+$lfcam[0]+".xml </KeyAssoc>\n");
        fprint($fileId,"<KeyIsName> true </KeyIsName>\n");
        fprint($fileId,"<ExportAsNewGrid>\n");
        fprint($fileId,"<Step> 30 30  </Step>\n");
        fprint($fileId,"<RayonInv> 2800 </RayonInv>\n");
        fprint($fileId,"</ExportAsNewGrid>\n");
        fprint($fileId,"</ExportCalib>\n");


}
else
{
        fprint($fileId,"<ExportPose>\n");
        fprint($fileId,"<PatternSel> (.*).tif </PatternSel>\n");
        fprint($fileId,"<KeyAssoc>  Key-Assoc-Im2OrFinale </KeyAssoc>\n");
        fprint($fileId,"<AddCalib>  true </AddCalib>\n");
        fprint($fileId,"<NbVerif>  10 </NbVerif>\n");
        fprint($fileId,"<TolWhenVerif> 1e-3 </TolWhenVerif>\n");
        fprint($fileId,"</ExportPose>\n");

}


        fprint($fileId,"<ExportCalib>\n");
        fprint($fileId,"<KeyAssoc> Key-Assoc-CleCal2AutoCalFinale </KeyAssoc>\n");
        fprint($fileId,"<KeyIsName> false </KeyIsName>\n");
        fprint($fileId,"</ExportCalib>\n");
fprint($fileId,"</SectionExport>\n");

        fprint($fileId,"</EtapeCompensation>\n");

    fprint($fileId,"</SectionCompensation>\n");

    fprint($fileId,"</ParamApero>\n");

    fprint($fileId,"</Global>\n");

    fclose($fileId);

    $apchant = exec("Apero "+$pathproj+"Apero-Chantier.xml > ResultChantier.txt");
```

```
$evol = true;


while($evol)
{

    system("grep \"End Iter\" ResultChantier.txt > evolChant.txt");


    $fo = $pathproj+"evolChant.txt";

    $fileId=`fopen $fo "r"`;

    $ievol=0;

    while ( !`feof $fileId` )
    {
        $nextLine = `fgetline $fileId`;
        $ievol=$ievol+1;
    }
    fclose $fileId;

    $levol = $ievol + "/12";

    text -edit -label $levol nc7_av2;
    text -edit -visible 1 nc7_av2;
    progressBar -edit -pr $ievol nc7_pb2;


    system("grep \"| |  RESIDU LIAISON MOYENS\" ResultChantier.txt >resChant.txt");


    $fo = $pathproj+"resChant.txt";

    $fileId=`fopen $fo "r"`;
    string $nextLine = `fgetline $fileId`;

    $lres="";

    while ( !`feof $fileId` )
    {
        $nextLine = `fgetline $fileId`;
        if ($nextLine!="")
        {
            $lres=$nextLine;
        }
    }

    $tabres=stringToStringArray($lres," ");

    if(size($tabres)>5)
    {

        $resChant=$tabres[6];

        fclose $fileId;

        $resChant = " Residu du chantier : "+startString($resChant,4);

        text -edit -label $resChant nc7_reschant;
        text -edit -visible 1 nc7_reschant;
    }

    $evol = alive($apchant);
    pause -sec 1;
}

system("grep \"| |  RESIDU LIAISON MOYENS\" ResultChantier.txt >resChant.txt");


$fo = $pathproj+"resChant.txt";

$fileId=`fopen $fo "r"`;
string $nextLine = `fgetline $fileId`;

$lres="";

while ( !`feof $fileId` )
{
    $nextLine = `fgetline $fileId`;
    if ($nextLine!="")
    {
        $lres=$nextLine;
```

```
        }
    }

    $tabres=stringToStringArray($lres," ");
    $resChant=$tabres[6];

    fclose $fileId;

    $resChant = " Residu du chantier : "+startString($resChant,4);

    text -edit -label $resChant nc7_reschant;
    text -edit -visible 1 nc7_reschant;


    text -edit -label "12/12" nc7_av2;
    progressBar -edit -pr 12 nc7_pb2;

    button -edit -enable 1 nc7_b3Dsift;
    button -edit -enable 1 nc7_bparam2;
    button -edit -enable 1 nc7_bchantreit;
    button -edit -enable 1 nc7_bparam1;

    iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC5;

}

////////////////////////////////////////////////////////////////////////
//      Generation des particles SIFT du chantier
////////////////////////////////////////////////////////////////////////

global proc siftCloud(string $nImp,string $pC) {

    global string $pathprojroot;

    global string $Reso3Dsift;
    global string $pathproj;

    string $posOriCam[];

    ////// generation du nuage 3D de previsualisation

    system("mkdir 3Dsift");

    $aiglo = `textScrollList -query -ai nc6_glol`;
    $ailoc = `textScrollList -query -ai nc6_locl`;

    $nbr3D = size($aiglo)/2;

    progressBar -edit -maxValue $nbr3D nc7_pb3;


    for ( $j=0; $j < size($aiglo); $j++ )
    {
        $orif = startString($aiglo[$j],26);

        setCamera($orif);
    }

    for ( $j=0; $j < size($ailoc); $j++ )
    {
        $orif = startString($ailoc[$j],26);

        $posOriCam[$j] = setCamera($orif);
    }




    for ( $j=0; $j < $nbr3D; $j++ )
    {
        $img1 = $aiglo[2*$j];
        $img2 = $aiglo[2*$j+1];

        $ori1 = "Ori-F/OrFinale-"+startString($img1,13)+"_MpDcraw8B_GB.xml";
        $ori2 = "Ori-F/OrFinale-"+startString($img2,13)+"_MpDcraw8B_GB.xml";



        $couple                                 =                                   "Pastis/LBPp-Match-
LBPpResol"+$Reso3Dsift+"_Teta0_"+startString($img1,13)+"_MpDcraw8B_GB/LBPpResol"+$Reso3Dsift+"
_Teta0_"+startString($img2,13)+"_MpDcraw8B_GB.result";

        system("3DsiftNB "+$pathproj+" "+$ori1+" "+$ori2+" "+$couple+" "+$j+" "+$Reso3Dsift+"
```

```
"+$pathprojroot+"nuages/imported/");

        $pr = $j + 1;
        progressBar -edit -pr $pr nc7_pb3;
        $av3 = $pr + "/" + $nbr3D;
        text -edit -label $av3 nc7_av3;


    }

    //nuages importés exportés dans NUBES

    $NUAGESIMPORTES = $pathprojroot+"/nuages/imported/";

    textScrollList -edit -ra $nImp;

    string $fNI[]=`getFileList -filespec "*.ma" -folder $NUAGESIMPORTES`;
    int $nfNI=size($fNI);
    if ($nfNI !=0) {
        textScrollList -edit -numberOfRows $nfNI $nImp;
        for ( $NI in $fNI ) {
            textScrollList -e -append $NI $nImp;
        }
    }else {print "le dossier est vide";}


    //photos calibrées exportées dans NUBES

    $PHOTOSCALIBREES = $pathprojroot+"/photos/calibred/";

    textScrollList -edit -ra $pC;

    string $fPC[]=`getFileList -filespec "*.JPG" -folder $PHOTOSCALIBREES`;
    int $nfPC=size($fPC);

    if ($nfPC != 0){
        textScrollList -edit -numberOfRows $nfPC $pC;
        for ( $PC in $fPC ) {
            textScrollList -e -append $PC $pC;
        }
    } else {print "le dossier est vide";}


    //exportation des images de corelation


    $pathShell = $pathproj+"listCorel.txt";
    $fileId = fopen($pathShell,"w");

    $ai = `textScrollList -query -ai nc6_locl`;

    // Nous considérons la première image comme une image master

    fprint($fileId,"+"+startString($ai[0],13)+".JPG\n");

    // La seconde image appartient également au site on l'utilise pour évaluer la distance moyenne entre pose

    fprint($fileId,startString($ai[1],13)+".JPG\n");


    $masterTab = stringToStringArray($posOriCam[0]," ");
    $photoTab = stringToStringArray($posOriCam[1]," ");

    float $mx = $masterTab[0];
    float $my = $masterTab[1];
    float $mz = $masterTab[2];
    float $mrx = $masterTab[3];
    float $mry = $masterTab[4];
    float $mrz = $masterTab[5];

    float $px = $photoTab[0];
    float $py = $photoTab[1];
    float $pz = $photoTab[2];
    float $prx = $photoTab[3];
    float $pry = $photoTab[4];
    float $prz = $photoTab[5];

    $dist2 = 9 * (($mx-$px)*($mx-$px) + ($my-$py)*($my-$py) + ($mz-$pz)*($mz-$pz));

    for ( $j=2; $j < size($ai); $j++ )
    {
        $photoTab = stringToStringArray($posOriCam[$j]," ");
```

```
        $px = $photoTab[0];
        $py = $photoTab[1];
        $pz = $photoTab[2];
        $rx = $photoTab[3];
        $ry = $photoTab[4];
        $rz = $photoTab[5];

        print ("calcul distance :\n");
        $dist2Test = ($mx-$px)*($mx-$px) + ($my-$py)*($my-$py) + ($mz-$pz)*($mz-$pz);
        print $dist2Test;

        if ($dist2Test<$dist2)
        { // cette image fait partie du site actuelle
             fprint($fileId,startString($ai[$j],13)+".JPG\n");
        }else
        {
             //cette image est une nouvelle image master
             fprint($fileId,"+"+startString($ai[$j],13)+".JPG\n");
             $mx = $px;
             $my = $py;
             $mz = $pz;
             $mrx = $rx;
             $mry = $ry;
             $mrz = $rz;
        }

    }
    fclose($fileId);

    iconTextStaticLabel -edit -i1 "recycle_green.xpm" avcPC6;

    $tab = stringToStringArray($pathprojroot, "/");
    $place = size($tab)-1;
    $proj = $tab[$place];

    print "Projet:\n";
    print $proj;


    RefreshTree($proj);
}
```

d) PbApero.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :            Aymeric GODET
////
//// Date :              10/09/10
////
//// Presentation :      Les fonctions utilisées lorsqu'il y a un problème avec les calculs d'APERO
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////////////////////
//      Affichage des résidus de la camera selectionné
////////////////////////////////////////////////////////////////////////////

global proc affResSel()
{

    global string $lfcamr[];

    $numcam = `optionMenuGrp -query -sl nc7b_selCam`;

    int $intr=$numcam-1;
    $lres = "Residu : "+$lfcamr[$intr];

    text -edit -label $lres nc7b_resCam;


    int $intresidu = $lfcamr[$intr];

    $cons="";
```

```
    if ($intresidu<1)
    {
        $cons = "Conseil : La calibration de la camera s'est bien deroulee.";
    }
    else
    {
        $cons = "Conseil : Les residus lors du calcul sont fort. Voir le journal pour plus
d'informations.";
    }
    text -edit -label $cons nc7b_consCam;

}


////////////////////////////////////////////////////////////////////////
//      Affichage le journal des calculs de la camera selectionné
////////////////////////////////////////////////////////////////////////

global proc Journal(int $cmd)
{

    global string $pathproj;



    if ($cmd)
    {
        system("gnome-open ResultChantier.txt");
    }
    else
    {
        $camsel = `optionMenuGrp -query -value nc7b_selCam`;
        $camsel = endString($camsel,3);

        system("gnome-open "+$pathproj+"ResultCal"+$camsel+".txt");
    }

}

////////////////////////////////////////////////////////////////////////
//      Relancer les calculs de calibration
////////////////////////////////////////////////////////////////////////

global proc ReCalib()
{
    affstep7bis(0,0);
    text -edit -visible 0 -label " Residus : |" nc7_rescal;
    text -edit -label "0%" nc7_av1;
    progressBar -edit -pr 0 nc7_pb1;
    button -edit -enable 0 nc7_bparam1;
    button -edit -enable 0 nc7_bstartChant;
    button -edit -enable 0 nc7_breit;

    TraitApero();
}

////////////////////////////////////////////////////////////////////////
//      Relancer les calculs de l'aérotriangulation du chantier
////////////////////////////////////////////////////////////////////////

global proc ReChant()
{
    affstep7bis(0,1);
    text -edit -visible 0 nc7_reschant;
    text -edit -label "0%" nc7_av2;
    progressBar -edit -pr 0 nc7_pb2;
    button -edit -enable 0 nc7_bparam2;

    system("rm -r Ori-F/");

    AperoChant();

}

////////////////////////////////////////////////////////////////////////
//      Réiterer les calculs de calibration (autocal->inical)
////////////////////////////////////////////////////////////////////////

global proc ReitCal()
{
```

```
    global string $lfcam[];
    global string $pathproj;

    for($i=0;$i<=size($lfcam);$i++)
    {
        $jnum = endString($lfcam[$i],3);
        system ("rm "+$pathproj+"Cal-"+$jnum+"-Init.xml");
        system    ("cp    "+$pathproj+"Auto-Calib-"+$jnum+".xml    "+$pathproj+"Cal-"+$jnum+"-
Init.xml");
    }


    TraitApero();
}

////////////////////////////////////////////////////////////////////////
//      Réiterer les calculs du chantier (final->inical)
////////////////////////////////////////////////////////////////////////

global proc ReitChant()
{

    global string $lfcam[];
    global string $pathproj;

    for($i=0;$i<=size($lfcam);$i++)
    {
        $jnum = endString($lfcam[$i],3);
        system ("rm "+$pathproj+"Cal-"+$jnum+"-Init.xml");
        system    ("cp    "+$pathproj+"Ori-F/F"+$jnum+"_AutoCalFinale.xml    "+$pathproj+"Cal-
"+$jnum+"-Init.xml");
    }

    AperoChant();

}

////////////////////////////////////////////////////////////////////////
//      Procedure pour la calibration des teleobjectifs
////////////////////////////////////////////////////////////////////////

global proc CalTele(int $ifocTele)
{

    global string $lfcam[];
    global string $pathproj;


////////////////////////////////////////////////////////////////////////////////////////////////////
//      Nous considerons que la deuxième (ou premiere) camera de lfcam n'est ni un teleobjectif, ni un fisheye
////////////////////////////////////////////////////////////////////////////////////////////////////


    $Appui = 1;

    if(size($lfcam)<=2)
    {
    // dans ce cas nous prenons le deuxième objectifs comme appui
        $Appui = 0;
    }


    $FocBase = endString($lfcam[$Appui],3);

    $focTele = "";


    // Gestion du 0 devant la focale au cas ou inf à 100
    if ($ifocTele>99)
    {
        $focTele = $ifocTele;
    }
    else
    {
        $focTele = "0"+$ifocTele;
    }



    $pathShell = $pathproj+"Apero-calF"+$focTele+".xml";
```

```
    $fileId = fopen($pathShell,"w");


    fprint($fileId,"<Global\n");
    fprint($fileId,"Subst=\"@$#1\"\n");
    fprint($fileId,"NameDecl=\"@$#1\"\n");
    fprint($fileId,">\n");
    fprint($fileId,"<ParamApero>\n");
    fprint($fileId,"<SectionBDD_Observation>\n");
    fprint($fileId,"<BDD_PtsLiaisons>\n");
    fprint($fileId,"<Id>    Id_Pastis_Hom  </Id> \n");
    fprint($fileId,"<KeySet> Key-Set-HomolPastisBin  </KeySet> \n");
    fprint($fileId,"<KeyAssoc>  Key-Assoc-CpleIm2HomolPastisBin   </KeyAssoc>\n");
    fprint($fileId,"<UseAsPtMultiple> true </UseAsPtMultiple>\n");
    fprint($fileId,"</BDD_PtsLiaisons>\n");
    fprint($fileId,"</SectionBDD_Observation>\n");
    fprint($fileId,"<SectionInconnues>\n");
    fprint($fileId,"<CalibrationCameraInc>\n");
    fprint($fileId,"<Name> TheKeyCalib_"+$FocBase+"</Name>\n");
    fprint($fileId,"<CalValueInit>\n");
    fprint($fileId,"<CalFromFileExtern>\n");
    fprint($fileId,"<NameFile>        Auto-Calib-"+$FocBase+".xml        </NameFile><NameTag>
CalibrationInternConique </NameTag>\n");
    fprint($fileId,"</CalFromFileExtern>\n");
    fprint($fileId,"</CalValueInit>\n");
    fprint($fileId,"</CalibrationCameraInc>\n");
    fprint($fileId,"<CalibrationCameraInc>\n");
    fprint($fileId,"<Name> TheKeyCalib_"+$focTele+"</Name>\n");
    fprint($fileId,"<CalValueInit>\n");
    fprint($fileId,"<CalFromFileExtern>\n");
    fprint($fileId,"<NameFile>            Cal-"+$focTele+"-Init.xml      </NameFile><NameTag>
CalibrationInternConique </NameTag>\n");
    fprint($fileId,"</CalFromFileExtern>\n");
    fprint($fileId,"</CalValueInit>\n");
    fprint($fileId,"</CalibrationCameraInc>\n");
    fprint($fileId,"<PoseCameraInc>\n");

    $ai = `textScrollList -query -ai nc6_call`;


       $imgfixe = "";

////////////////////////////////////////////

       $startF= "F"+$FocBase;

       for ( $j=0; $j < size($ai); $j++ )
            {
                if (startString($ai[$j],4)==$startF)
                {
                    $imgfixe = $ai[$j];
                }
            }
////////////////////////////////////////////



    fprint($fileId,"<PatternName>"+$imgfixe+"</PatternName>\n");

    fprint($fileId,"<CalcNameCalib>  TheKeyCalib_"+$FocBase+"</CalcNameCalib>\n");
    fprint($fileId,"<PosValueInit>\n");
    fprint($fileId,"<PosId> ### </PosId>\n");
    fprint($fileId,"</PosValueInit>\n");
    fprint($fileId,"</PoseCameraInc>\n");
    fprint($fileId,"<PoseCameraInc>\n");

    $patimgcal = "";

    for ( $j=0; $j < size($ai); $j++ )
    {
        if (startString($ai[$j],4)==$lfcam[$Appui])
        {

            $imgfixe = $ai[$j];

            $limgcal = stringToStringArray($imgfixe, "_");

            $patimgcal = $patimgcal+$limgcal[2]+"|";
        }
    }
    $nbstr = size($patimgcal)-1;
```

```
fprint($fileId,"<PatternName>"+startString($imgfixe,9)+"("+startString($patimgcal,$nbstr)+")_M
pDcraw8B_GB.tif</PatternName>\n");

    fprint($fileId,"<AutoRefutDupl> true </AutoRefutDupl>\n");

    fprint($fileId,"<CalcNameCalib>TheKeyCalib_"+$FocBase+"</CalcNameCalib>\n");

    fprint($fileId,"<PosesDeRattachement>  0  </PosesDeRattachement>\n");
    fprint($fileId,"<InitNow> false </InitNow>\n");
    fprint($fileId,"<MEP_SPEC_MST>\n");
    fprint($fileId,"<Show> true </Show>\n");
    fprint($fileId,"</MEP_SPEC_MST>\n");
    fprint($fileId,"<PosValueInit>\n");
    fprint($fileId,"<PoseFromLiaisons>\n");
    fprint($fileId,"<LiaisonsInit>\n");
    fprint($fileId,"<NameCam> ###   </NameCam>\n");
    fprint($fileId,"<IdBD> Id_Pastis_Hom  </IdBD>\n");
    fprint($fileId,"</LiaisonsInit>\n");
    fprint($fileId,"</PoseFromLiaisons>\n");
    fprint($fileId,"</PosValueInit>\n");
    fprint($fileId,"</PoseCameraInc>\n");
    fprint($fileId,"<PoseCameraInc>\n");

    $patimgcal = "";

    $fTele = "F"+$focTele;

    for ( $j=0; $j < size($ai); $j++ )
    {
        if (startString($ai[$j],4)==$fTele)
        {
            $imgfixe = $ai[$j];

            $limgcal = stringToStringArray($imgfixe, "_");

            $patimgcal = $patimgcal+$limgcal[2]+"|";
        }
    }

    $nbstr = size($patimgcal)-1;


fprint($fileId,"<PatternName>"+startString($imgfixe,9)+"("+startString($patimgcal,$nbstr)+")_M
pDcraw8B_GB.tif</PatternName>\n");

    fprint($fileId,"<AutoRefutDupl> true </AutoRefutDupl>\n");

    fprint($fileId,"<CalcNameCalib>TheKeyCalib_"+$focTele+"</CalcNameCalib>\n");

    fprint($fileId,"<PosesDeRattachement>  0  </PosesDeRattachement>\n");
    fprint($fileId,"<InitNow> false </InitNow>\n");
    fprint($fileId,"<MEP_SPEC_MST>\n");
    fprint($fileId,"<Show> true </Show>\n");
    fprint($fileId,"</MEP_SPEC_MST>\n");
    fprint($fileId,"<PosValueInit>\n");
    fprint($fileId,"<PoseFromLiaisons>\n");
    fprint($fileId,"<LiaisonsInit>\n");
    fprint($fileId,"<NameCam> ###   </NameCam>\n");
    fprint($fileId,"<IdBD> Id_Pastis_Hom  </IdBD>\n");
    fprint($fileId,"</LiaisonsInit>\n");
    fprint($fileId,"</PoseFromLiaisons>\n");
    fprint($fileId,"</PosValueInit>\n");
    fprint($fileId,"</PoseCameraInc>\n");
    fprint($fileId,"</SectionInconnues>\n");
    fprint($fileId,"<SectionChantier>\n");
    fprint($fileId,"<DirectoryChantier> ThisDir\n");
    fprint($fileId,"</DirectoryChantier>\n");
    fprint($fileId,"</SectionChantier>\n");
    fprint($fileId,"<SectionSolveur>\n");
    fprint($fileId,"<ModeResolution> eSysPlein </ModeResolution>\n");
    fprint($fileId,"</SectionSolveur>\n");
    fprint($fileId,"<SectionCompensation>\n");
    fprint($fileId,"<EtapeCompensation>\n");
    fprint($fileId,"<IterationsCompensation>\n");
    fprint($fileId,"<Pose2Init>\n");

    fprint($fileId,"<ProfMin> [2,3,4,5] </ProfMin>\n");

    fprint($fileId,"<Show> true </Show>\n");
    fprint($fileId,"</Pose2Init>\n");
    fprint($fileId,"<SectionContraintes>\n");
    fprint($fileId,"<ContraintesCamerasInc>\n");
    fprint($fileId,"<Val> eLiberteFocale_0  </Val>\n");
    fprint($fileId,"<Val> eLib_PP_CD_00     </Val>\n");
```

```
fprint($fileId,"<Val> eLiberte_DR0      </Val>\n");
fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"<ContraintesPoses>\n");
fprint($fileId,"<NamePose>   0 </NamePose>\n");
fprint($fileId,"<Val>      ePoseFigee   </Val>\n");
fprint($fileId,"</ContraintesPoses>\n");
fprint($fileId,"<ContraintesPoses>\n");
fprint($fileId,"<NamePose>   1     </NamePose>\n");
fprint($fileId,"<Val>      ePoseBaseNormee   </Val>\n");
fprint($fileId,"<PoseRattachement>   0 </PoseRattachement>\n");
fprint($fileId,"</ContraintesPoses>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
fprint($fileId,"<SectionObservations>\n");
fprint($fileId,"<ObsLiaisons>\n");
fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
fprint($fileId,"<Pond>\n");
fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
fprint($fileId,"<NbMax>   100    </NbMax>\n");
fprint($fileId,"<EcartMax> 30 </EcartMax>\n");
fprint($fileId,"<SigmaPond> 5 </SigmaPond>\n");
fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
fprint($fileId,"</Pond>\n");
fprint($fileId,"</ObsLiaisons>\n");
fprint($fileId,"</SectionObservations>\n");
fprint($fileId,"</EtapeCompensation>\n");
fprint($fileId,"<EtapeCompensation>\n");
fprint($fileId,"<IterationsCompensation>\n");
fprint($fileId,"<SectionContraintes>\n");
fprint($fileId,"<ContraintesCamerasInc>\n");
fprint($fileId,"<Val> eLiberte_DR1      </Val>\n");
fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation>\n");
fprint($fileId,"<SectionContraintes>\n");
fprint($fileId,"<ContraintesCamerasInc>\n");
fprint($fileId,"<Val> eLiberte_DR2      </Val>\n");
fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation>\n");
fprint($fileId,"<SectionContraintes>\n");
fprint($fileId,"<ContraintesCamerasInc>\n");
fprint($fileId,"<Val> eLiberte_DR3      </Val>\n");
fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation>\n");
fprint($fileId,"<SectionContraintes>\n");
fprint($fileId,"<ContraintesCamerasInc>\n");
fprint($fileId,"<Val> eLiberteFocale_1  </Val>\n");
fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation>\n");
fprint($fileId,"<SectionContraintes>\n");
fprint($fileId,"<ContraintesCamerasInc>\n");
fprint($fileId,"<Val> eLib_PP_CD_Lies      </Val>\n");
fprint($fileId,"</ContraintesCamerasInc>\n");
fprint($fileId,"</SectionContraintes>\n");
fprint($fileId,"</IterationsCompensation>\n");
fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
fprint($fileId,"<SectionObservations>\n");
fprint($fileId,"<ObsLiaisons>\n");
fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
fprint($fileId,"<Pond>\n");
fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
fprint($fileId,"<NbMax>   100    </NbMax>\n");
fprint($fileId,"<EcartMax> 15 </EcartMax>\n");
fprint($fileId,"<SigmaPond> 3 </SigmaPond>\n");
fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
fprint($fileId,"</Pond>\n");
fprint($fileId,"</ObsLiaisons>\n");
fprint($fileId,"</SectionObservations>\n");
fprint($fileId,"</EtapeCompensation>\n");
fprint($fileId,"<EtapeCompensation>\n");
fprint($fileId,"<IterationsCompensation> </IterationsCompensation>\n");
fprint($fileId,"<SectionObservations>\n");
```

```
    fprint($fileId,"<ObsLiaisons>\n");
    fprint($fileId,"<NameRef> Id_Pastis_Hom </NameRef>\n");
    fprint($fileId,"<Pond>\n");
    fprint($fileId,"<EcartMesureIndiv>  1.0 </EcartMesureIndiv>\n");
    fprint($fileId,"<Show> eNSM_Paquet     </Show>\n");
    fprint($fileId,"<NbMax>   100    </NbMax>\n");
    fprint($fileId,"<EcartMax> 15 </EcartMax>\n");
    fprint($fileId,"<SigmaPond> 1.5 </SigmaPond>\n");
    fprint($fileId,"<ModePonderation> eL1Secured </ModePonderation>\n");
    fprint($fileId,"</Pond>\n");
    fprint($fileId,"</ObsLiaisons>\n");
    fprint($fileId,"</SectionObservations>\n");
    fprint($fileId,"<SectionExport>\n");
    fprint($fileId,"<ExportCalib>\n");

    fprint($fileId,"<KeyAssoc>    Auto-Calib-"+$focTele+".xml    </KeyAssoc><KeyIsName>  true
</KeyIsName>\n");

    fprint($fileId,"</ExportCalib>\n");
    fprint($fileId,"</SectionExport>\n");
    fprint($fileId,"</EtapeCompensation>\n");
    fprint($fileId,"</SectionCompensation>\n");
    fprint($fileId,"</ParamApero>\n");
    fprint($fileId,"</Global>\n");



    fclose($fileId);

}
```

e) TreeCor.mel

```
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
////
//// Auteur :             Aymeric GODET
////
//// Date :               10/09/10
////
//// Presentation :       Fonctions gerant l'interactivité avec l'arbre de corrélation dans NUBES
////
////
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////



////////////////////////////////////////////////////////////////////////////
//      Sauvegarde de l'arbre de corrélation
////////////////////////////////////////////////////////////////////////////

global proc SaveTree(string $projet)
{

    $tabarbre = `treeView -ch -si -query treeCor`;

    $pathShell                                                                    =
"/home/aymeric/Bureau/NUBES/NUBESProject/"+$projet+"/PhotoCloud/listCorel.txt";

    print "\n Hello \n";
    print $pathShell;
    print "\n Hello \n";

    $fileId = fopen($pathShell,"w");

    for($j=0;$j<size($tabarbre);$j++)
    {

        $testmaster = `treeView -il $tabarbre[$j] -query treeCor`;
        if ($testmaster)
        {
            fprint($fileId,$tabarbre[$j]+"\n");
        }
        else
        {
            fprint($fileId,"+"+$tabarbre[$j]+"\n");
        }
```

```
    }

    fclose($fileId);
}

////////////////////////////////////////////////////////////////////////
//       Gestion de l'affichage des outils en fonctions de l'image selectionné dans l'arbre
////////////////////////////////////////////////////////////////////////

global proc TreeButton (string $s, string $proj)
{


    if ($s=="null")
    {
        $tabs = `treeView -query -si treeCor`;
        $s = $tabs[0];
    }


    $tabtestMasq = `treeView -bcl $s 0.1 0.1 0.1 -query treeCor`;

    int $testMasq = 10*$tabtestMasq[1];


    $tab = stringToStringArray($s,"_");
    $numMaster = startString($tab[2],4);

    $renderLayer = "R"+$numMaster;
    if ( `objExists $renderLayer` )
    {
        editRenderLayerGlobals -currentRenderLayer $renderLayer;
    }
    else
    {
        createRenderLayer -name $renderLayer;
        editRenderLayerGlobals -currentRenderLayer $renderLayer;
    }


    if($testMasq==5)
    {
        // Rien a été fait
        button -edit -enable 0 MasqGen;
        button -edit -enable 0 MMlaunch;
        modelEditor  -edit  -displayAppearance "wireframe" stepcorMODEL1;
    }
    else if ($testMasq==0)
    {
        // Le masque est en cours de saisie
        button -edit -enable 0 MasqGen;
        button -edit -enable 0 MMlaunch;
        modelEditor  -edit  -displayAppearance "wireframe" stepcorMODEL1;
    }
    else if ($testMasq==6)
    {
        // Le masque est validé
        button -edit -enable 1 MasqGen;
        button -edit -enable 0 MMlaunch;
        modelEditor  -edit  -displayAppearance "smoothShaded" stepcorMODEL1;
    }
    else if ($testMasq==10)
    {
        // Le masque est généré
        button -edit -enable 0 MasqGen;
        button -edit -enable 1 MMlaunch;
        modelEditor  -edit  -displayAppearance "smoothShaded" stepcorMODEL1;
    }
    else if ($testMasq==8)
    {
        // La corrélation a été effectuée
        button -edit -enable 0 MasqGen;
        button -edit -enable 0 MMlaunch;
        modelEditor  -edit  -displayAppearance "smoothShaded" stepcorMODEL1;

                $miniPath                                                                   =
"/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/PhotoCloud/mini/shade"+endString(startStrin
g($s,13),4)+".jpg";
                $tt = "imgCor6";
                image -edit -i $miniPath -ann "Shade" $tt ;
    }
```

```
}

////////////////////////////////////////////////////////////////////////
//      Met à jour la visualisation de l'image en fonction de la selection
////////////////////////////////////////////////////////////////////////

global proc int CorVue(string $proj,string $toolbar,string $s,int $i)
{

    if ($i)
    {
        $url = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/photos/calibred";
        string $basename=`basenameEx($url+"/"+$s)`;


        $newpb = $url+"/"+$basename+".mel";

        file -f -i ($url+"/"+$basename+".mel");
        cameraSET;

       // Affichage des images fils

       $numSun = 0;

       $img = `treeView -ch $s -query treeCor`;

       if (size($img)>6)
       {
              $numSun = 6;
       }
       else
       {
              $numSun = size($img);
       }

       for ($i=1;$i<7;$i++)
       {
              $miniPath = "/home/aymeric/Bureau/NUBES/PhotoCloud/empty.jpg";
              eval("image -edit -i \""+$miniPath+"\" -ann \"\" imgCor"+$i+";");
       }


       for ($i=1;$i<=$numSun;$i++)
       {
              $miniPath                                                                                    =
"/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/PhotoCloud/mini/"+startString($img[$i],13)+
"_MpDcraw8B_GB.jpg";
              $tt = "imgCor"+$i;
              image -edit -i $miniPath -ann $img[$i] $tt ;
              print $miniPath;
       }



        $testmaster = `treeView -il $s -query treeCor`;

        if ($testmaster)
        {
            shelfLayout -edit -enable 0 $toolbar;
        }
        else
        {
            shelfLayout -edit -enable 1 $toolbar;
        }

        TreeButton ($s,$proj);

    }
    return 1;
}

////////////////////////////////////////////////////////////////////////
//      Met à jour l'arbre de corrélation avec le fichier de reference
////////////////////////////////////////////////////////////////////////

global proc RefreshTree(string $proj)
{

    $pathproj = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/PhotoCloud/listCorel.txt";
```

```
    // efface les branche

    treeView -edit -ra treeCor;

    string $root;
    int $cpt;


    $fileId=`fopen $pathproj "r"`;
    while ( !`feof $fileId` ) {

        string $nextline = `fgetline $fileId`;
        if ( startString ($nextline,1)=="+") {
            // nouvel branche
            $cpt = size($nextline)-1;
            $root = startString(endString($nextline,$cpt),$cpt-1);//+":";
            treeView -edit -addItem $root "" treeCor;
        }
        else
        {
            // feuille
            $cpt = size($nextline)-1;
            $leef = startString($nextline,$cpt);
            if($leef!="")
            {
                treeView -edit -addItem $leef $root  treeCor;
            }
        }
    }

    fclose $fileId;

}
```

f)Masq.mel

```
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////
////
////  Auteur :            Aymeric GODET
////
////  Date :              10/09/10
////
////  Presentation :      Les fonctions relatives à la génération des masques
////
////
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////////////////
//      Validation du masque saisi
////////////////////////////////////////////////////////////////////////

global proc ValidMasq(int $new)
{
    $img = `treeView -query -si treeCor`;


    $tabnum = stringToStringArray($img[0], "_");


    $masq = "M"+startString($tabnum[2],4);

    if ( `objExists $masq` )
    {
        select -cl;
        select -r $masq;
        delete;
    }

    $img = `treeView -query -si treeCor`;

    if($new)
    {
        // le créer un nouveau masque
        rename "polySurface1" $masq;
```

```
        treeView -edit -bh $img[0] 1 -bcl $img[0] 1 0.7 0 treeCor;

        $renderLayer = "R"+startString($tabnum[2],4);

        editRenderLayerMembers -nr $renderLayer $masq;

    }
    else
    {
        // On efface le masque
        treeView -edit -bh $img[0] 1 -bcl $img[0] 1 0 0 treeCor;
        if ( `objExists polySurface1` )
        {
             select -cl;
             select -r polySurface1;
             delete;
        }
    }

    TreeButton ("null","null");
}


////////////////////////////////////////////////////////////////////////
//      Saisie du masque
////////////////////////////////////////////////////////////////////////

global proc SaisiMasq()
{

    $rot = `camera -query -rot photoCam1`;
    $pos = `camera -query -p photoCam1`;

    // Position et orientation du plan de saisi

    $img = `treeView -query -si treeCor`;


    treeView -edit -bh $img[0] 1 -bcl $img[0] 1 0 0 treeCor;

    $tabnum = stringToStringArray($img[0], "_");
    $num = startString($tabnum[2],4);
    $planelive = "P"+$num;


    $existence = `objExists $planelive`;
    if ( $existence==false )
    {
        plane -name $planelive -p $pos[0] $pos[1] $pos[2] -r $rot[0] $rot[1] $rot[2] ;
    }

    move -r -os  0 0 -0.99;


    // Mise a l'echelle

    float $focal = 24;
    float $matrixsizeX = 36;
    float $matrixsizeY = 24;

    float $scaleX;
    float $scaleY;

    $scaleX = $matrixsizeX / (2*$focal);
    $scaleY = $matrixsizeY / (2*$focal);


    scale -a -scaleX $scaleX -scaleY $scaleY;


    select -cl;
    select -r $planelive;

    makeLive;

    CreatePolygonTool;


}

////////////////////////////////////////////////////////////////////////
//      Calcul du rendu du masque
```

```
////////////////////////////////////////////////////////////////////////

global proc MasqGen(string $proj)
{

    // Taille de l'image originale dans $pathproj


    $pathproj = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/PhotoCloud/";
    print $pathproj;

    // Detection de l'image master choisi et du masque associé


    $img = `treeView -query -si treeCor`;

    $tabnum = stringToStringArray($img[0], "_");
    $num = startString($tabnum[2],4);
    $masq = "M"+$num;
    $renderLayer = "R"+$num;

    // Detection de la resolution du rendu

    $listtif = `getFileList -folder $pathproj -filespec "*.tif"`;

    print $listtif;

    string $cmd = "identify -format \"%[fx:w] %[fx:h]\" "+$pathproj+$listtif[0];

    print $cmd;

    $pipe = popen( $cmd, "r" );

    $lastdat = fgetline( $pipe );

    pclose( $pipe );

    $taille = stringToStringArray($lastdat, " ");


    float $We1 = $taille[0];
    float $He1 = $taille[1];
    float $rat1 = $We1/$He1;

    select -r defaultRenderGlobals;
    setAttr "defaultResolution.width" $We1;
    setAttr "defaultResolution.height" $He1;
    setAttr "defaultResolution.deviceAspectRatio" $rat1;
    setAttr "defaultRenderGlobals.imageFormat" 3; // tif
    setAttr "imagePlanePhoto1.alphaGain" -1;
    setAttr "lambert1.transparency" -type double3 0 0 0 ;

    $pathrender =`render -l $renderLayer photoCam1`;

    setAttr "lambert1.transparency" -type double3 0.6 0.6 0.6 ;
    setAttr "imagePlanePhoto1.alphaGain" 1;

    system("convert "+$pathrender+" -depth 1 -compress None -channel matte -separate  +matte
"+$pathproj+"Masque/neg.tif");
    system("convert                    -negate                    "+$pathproj+"Masque/neg.tif
"+$pathproj+startString($img[0],13)+"_MpDcraw8B_GB_Masq.tif");

    // Redaction du fichier xml rataché au Masque

    $pathShell = $pathproj+startString($img[0],13)+"_MpDcraw8B_GB_Masq.xml";
    $fileId = fopen($pathShell,"w");


    fprint($fileId,"<?xml version=\"1.0\" ?>\n");
    fprint($fileId,"<FileOriMnt>\n");

fprint($fileId,"<NameFileMnt>./"+startString($img[0],13)+"_MpDcraw8B_GB_Masq.tif</NameFileMnt>
\n");
    fprint($fileId,"<NombrePixels>"+$We1+" "+$He1+"</NombrePixels>\n");
    fprint($fileId,"<OriginePlani>0 0</OriginePlani>\n");
    fprint($fileId,"<ResolutionPlani>1 1</ResolutionPlani>\n");
    fprint($fileId,"<OrigineAlti>0</OrigineAlti>\n");
    fprint($fileId,"<ResolutionAlti>1</ResolutionAlti>\n");
    fprint($fileId,"<Geometrie>eGeomMNTFaisceauIm1PrCh_Px1D</Geometrie>\n");
    fprint($fileId,"</FileOriMnt>\n");
    fclose($fileId);
```

```
    $img = `treeView -query -si treeCor`;
    treeView -edit -bh $img[0] 1 -bcl $img[0] 1 1 0 treeCor;

    TreeButton ("null","null");

}
```

g) TraitMICMAC.mel

```
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////
////
////  Auteur :            Aymeric GODET
////
////  Date :              10/09/10
////
////  Presentation :      Fonction pour paramétrer MICMAC et le lancer
////
////
////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////////////////
//      Redaction du fichier de paramètres et lancement de MICMAC
////////////////////////////////////////////////////////////////////////

global proc MicmacLauncher(string $proj,string $progressBarmm, string $MMPBT, string $nImp)
{

    $pathproj = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/PhotoCloud/";
    $pathcloud = "/home/aymeric/Bureau/NUBES/NUBESProject/"+$proj+"/nuages/imported/";

    $img = `treeView -query -si treeCor`;
    $masterc=$img[0];

    text -edit -label "Avancement de la correlation :   0 %" -visible 1 $MMPBT;
    progressBar -edit -pr 0 -visible 1 $progressBarmm ;

    $img = `treeView -ch $img[0] -query treeCor`;

    $tab = stringToStringArray($masterc, "_");

    $foc = endString($tab[0],3);
    $des = $tab[1];
    $master = startString($tab[2],4);

    $pathcloud = $pathcloud + "Corel"+$master +".ma";


    $pathShell = $pathproj+"param-MICMAC.xml";
    $fileId = fopen($pathShell,"w");

    fprint($fileId,"<ParamMICMAC \n");
    fprint($fileId,"Subst=\"@$#1\"\n");
    fprint($fileId,"NameDecl=\"@$#1\"\n");
    fprint($fileId,"NumImC=\"@XXXXX\"\n");
    fprint($fileId,"NumImV=\"@XXXX\"\n");
    fprint($fileId,"Foc=\"@035\"\n");
    fprint($fileId,">\n");
    fprint($fileId,"<Section_Terrain>\n");
    fprint($fileId,"<IntervAltimetrie>\n");
    fprint($fileId,"<ZIncCalc>   0.0 </ZIncCalc>\n");
    fprint($fileId,"</IntervAltimetrie>\n");
    fprint($fileId,"<IntervSpecialZInv >\n");
    fprint($fileId,"<MulZMin> 0.5 </MulZMin>\n");
    fprint($fileId,"<MulZMax> 3  </MulZMax>\n");
    fprint($fileId,"</IntervSpecialZInv>\n");
    fprint($fileId,"<Planimetrie>\n");
    fprint($fileId,"<MasqueTerrain >\n");
    fprint($fileId,"<MT_Image>                F${Foc}_"+$des+"_${NumImC}_MpDcraw8B_GB_Masq.tif
</MT_Image>\n");
    fprint($fileId,"<MT_Xml>                  F${Foc}_"+$des+"_${NumImC}_MpDcraw8B_GB_Masq.xml
</MT_Xml>\n");
    fprint($fileId,"</MasqueTerrain>\n");
    fprint($fileId,"</Planimetrie>\n");
    fprint($fileId,"</Section_Terrain>\n");
```

```
fprint($fileId,"<Section_PriseDeVue >\n");
fprint($fileId,"<GeomImages> eGeomImageOri </GeomImages>\n");
fprint($fileId,"<Images>\n");
fprint($fileId,"<Im1 >     F${Foc}_"+$des+"_${NumImC}_MpDcraw8B_GB.tif </Im1>\n");
fprint($fileId,"<ImPat >   F${Foc}_"+$des+"_${NumImV}_MpDcraw8B_GB.tif </ImPat>\n");
fprint($fileId,"</Images>\n");
fprint($fileId,"<NomsGeometrieImage>\n");
fprint($fileId,"<FCND_Mode_GeomIm>\n");
fprint($fileId,"<FCND_GeomCalc> Key-Assoc-Im2OrFinale  </FCND_GeomCalc>\n");
fprint($fileId,"</FCND_Mode_GeomIm>\n");
fprint($fileId,"</NomsGeometrieImage>\n");
fprint($fileId,"</Section_PriseDeVue>\n");
fprint($fileId,"<Section_MEC >\n");
fprint($fileId,"<ChantierFullImage1>  true </ChantierFullImage1>\n");
fprint($fileId,"<TypePyramImage>\n");
fprint($fileId,"<Resol>   2            </Resol>\n");
fprint($fileId,"<TypeEl>  eFloat32Bits </TypeEl>\n");
fprint($fileId,"</TypePyramImage>\n");
fprint($fileId,"<EtapeMEC>\n");
fprint($fileId,"<DeZoom >  -1             </DeZoom>\n");
fprint($fileId,"<DynamiqueCorrel> eCoeffCorrelStd </DynamiqueCorrel>\n");
fprint($fileId,"<AggregCorr> eAggregSymetrique </AggregCorr>\n");
fprint($fileId,"<SzW >       2               </SzW>\n");
fprint($fileId,"<AlgoRegul>  eAlgo2PrgDyn </AlgoRegul>\n");
fprint($fileId,"<ZRegul>  0.05     </ZRegul>\n");
fprint($fileId,"<ZPas>   0.5     </ZPas>\n");
fprint($fileId,"<ZDilatAlti>  3  </ZDilatAlti>\n");
fprint($fileId,"<ZDilatPlani> 4  </ZDilatPlani>\n");
fprint($fileId,"<ModulationProgDyn>\n");
fprint($fileId,"<EtapeProgDyn>\n");
fprint($fileId,"<ModeAgreg> ePrgDAgrSomme </ModeAgreg>\n");
fprint($fileId,"<NbDir>   6              </NbDir>\n");
fprint($fileId,"</EtapeProgDyn>\n");
fprint($fileId,"<Px1PenteMax>   10.0    </Px1PenteMax>\n");
fprint($fileId,"</ModulationProgDyn>\n");
fprint($fileId,"<GenImagesCorrel> true </GenImagesCorrel>\n");
fprint($fileId,"</EtapeMEC>\n");
fprint($fileId,"<EtapeMEC> <DeZoom >  64    </DeZoom> </EtapeMEC>\n");
fprint($fileId,"<EtapeMEC> <DeZoom >  32    </DeZoom> </EtapeMEC>\n");
fprint($fileId,"<EtapeMEC> <DeZoom >  16  </DeZoom> </EtapeMEC>\n");
fprint($fileId,"<EtapeMEC> <DeZoom >  8   </DeZoom> </EtapeMEC>\n");
fprint($fileId,"<EtapeMEC> <DeZoom >  4   </DeZoom> </EtapeMEC>\n");
fprint($fileId,"<EtapeMEC><DeZoom >  2    </DeZoom>\n");
fprint($fileId,"<SzW>      1   </SzW>\n");
fprint($fileId,"</EtapeMEC>\n");
fprint($fileId,"<EtapeMEC>\n");
fprint($fileId,"<DeZoom >  1               </DeZoom>\n");
fprint($fileId,"<ZDilatAlti>  2  </ZDilatAlti>\n");
fprint($fileId,"<ZDilatPlani> 2  </ZDilatPlani>\n");
fprint($fileId,"<SzW>      1               </SzW>\n");
fprint($fileId,"</EtapeMEC>\n");
fprint($fileId,"<EtapeMEC>\n");
fprint($fileId,"<DeZoom >  1  </DeZoom>\n");
fprint($fileId,"<ZPas>   1.0     </ZPas>\n");
fprint($fileId,"<AlgoRegul> eAlgoDequant </AlgoRegul>\n");
fprint($fileId,"</EtapeMEC>\n");
fprint($fileId,"</Section_MEC>\n");
fprint($fileId,"<Section_Results >\n");
fprint($fileId,"<GeomMNT> eGeomMNTFaisceauIm1PrCh_Px1D </GeomMNT>\n");
fprint($fileId,"<DoMEC >  true </DoMEC>\n");
fprint($fileId,"<ZoomMakeTA> 8 </ZoomMakeTA>\n");
fprint($fileId,"<GammaVisu> 2.0 </GammaVisu>\n");
fprint($fileId,"<ZoomVisuLiaison> -1 </ZoomVisuLiaison>\n");
fprint($fileId,"</Section_Results>\n");
fprint($fileId,"<Section_WorkSpace >\n");
fprint($fileId,"<TmpMEC > GeoI-${NumImC}/ </TmpMEC>\n");
fprint($fileId,"<TmpPyr > GeoI-${NumImC}/ </TmpPyr>\n");
fprint($fileId,"<TmpResult > GeoI-${NumImC}/ </TmpResult>\n");

// Nombre de processeur utilisés pour le calcul

fprint($fileId,"<ByProcess> 7 </ByProcess>\n");

fprint($fileId,"<WorkDir >  ThisDir </WorkDir>\n");
fprint($fileId,"<AvalaibleMemory> 1024 </AvalaibleMemory>\n");
fprint($fileId,"<SzDalleMin>  400 </SzDalleMin>\n");
fprint($fileId,"<SzDalleMax>  1000  </SzDalleMax>\n");
fprint($fileId,"<SzRecouvrtDalles> 100 </SzRecouvrtDalles>\n");
fprint($fileId,"<FirstEtapeMEC> 0 </FirstEtapeMEC>\n");
fprint($fileId,"<MapMicMac>\n");
fprint($fileId,"<ActivateCmdMap> true </ActivateCmdMap>\n");
fprint($fileId,"<ModeCmdMapeur>\n");
fprint($fileId,"<CM_One> toto </CM_One>\n");
fprint($fileId,"</ModeCmdMapeur>\n");
```

```
    fprint($fileId,"<CMVA>\n");

    // Definition du jeu de correlation

    string $lnumimg[];

    $list = "";

    for ($i=1;$i<size($img);$i++)
    {
        $tab = stringToStringArray($img[$i], "_");
        $list = $list+startString($tab[2],4)+"|";

    }
    $lg = size($list)-1;
    $list = startString($list,$lg);

    fprint($fileId,"<NV> Foc \""+$foc+"\" </NV><NV> NumImC \""+$master+"\" </NV><NV> NumImV
\"("+$list+")\"</NV>\n");
    fprint($fileId,"</CMVA>\n");
    fprint($fileId,"</MapMicMac>\n");
    fprint($fileId,"<PostProcess>\n");
    fprint($fileId,"<OneCmdPar>\n");

    // Besoin de l'extension du Raw

    $pathraw = $pathproj+"Raw/";

    string $fR[]=`getFileList -folder $pathraw`;

    $raw = endString($fR[0],3);

    fprint($fileId,"<OneCmdSer>    MpDcraw    ${ThisDir}Raw/F${Foc}_"+$des+"_${NumImC}."+$raw+"
16B=0 CB=1 </OneCmdSer>\n");

    // Resolution souhaitée

    $resoCloud = `textField -query -text tfResoMM`;


    fprint($fileId,"<OneCmdSer> GrShade ${ThisDir}GeoI-${NumImC}/Z_Num8_DeZoom1_LeChantier.tif
Mask=Masq_LeChantier_DeZoom1.tif NbDir=4 </OneCmdSer>");
    fprint($fileId,"<OneCmdSer>                    convert                    ${ThisDir}GeoI-
${NumImC}/Z_Num8_DeZoom1_LeChantierShade.tif                -scale                    800x800
${ThisDir}moy_jpg/shade${NumImC}.jpg </OneCmdSer>");
    fprint($fileId,"<OneCmdSer>                    convert                    ${ThisDir}GeoI-
${NumImC}/Z_Num8_DeZoom1_LeChantierShade.tif  -scale  120x180  ${ThisDir}mini/shade${NumImC}.jpg
</OneCmdSer>");
    fprint($fileId,"<OneCmdSer>            Nuage2Ply                    ${ThisDir}GeoI-
${NumImC}/NuageImProf_LeChantier_Etape_8.xml            Bin=0            Scale="+$resoCloud+"
Attr=${ThisDir}Raw/F${Foc}_"+$des+"_${NumImC}_MpDcraw8B_CB.tif</OneCmdSer>\n");
    fprint($fileId,"<OneCmdSer> mv ${ThisDir}GeoI-${NumImC}/NuageImProf_LeChantier_Etape_8.ply
${ThisDir}PLY/${NumImC}.ply </OneCmdSer>\n");
    fprint($fileId,"<OneCmdSer> mv ${ThisDir}GeoI-${NumImC}/Z_Num8_DeZoom1_LeChantierShade.tif
${ThisDir}</OneCmdSer>\n");
    fprint($fileId,"</OneCmdPar>\n");
    fprint($fileId,"</PostProcess>\n");
    fprint($fileId,"</Section_WorkSpace>\n");
    fprint($fileId,"<Section_Vrac>\n");
    fprint($fileId,"</Section_Vrac>\n");
    fprint($fileId,"</ParamMICMAC>\n");
    fclose($fileId);


    $posActu = `pwd`;

    chdir $pathproj;

    ////////////////////////////////////////////////////////////////////////////////
    ////
    ////        EVOLUTION DE MICMAC
    ////
    ////////////////////////////////////////////////////////////////////////////////

    $pid=exec("MICMAC param-MICMAC.xml > journalMM.txt");

    $evol = true;

    $ETAPEmm = 64;      // Niveau le plus haut de la pyramide d'image
    $PROGmm = 0;        // Progression de la barre
```

```
$NBdezoom1 = 0; // Nombre de bloc au niveau de zoom 1

while($evol)
{

    if($NBdezoom1==0)
    {

        if($ETAPEmm!=1)
        {
           // Determination de l'etape
           system("grep \"BEGIN ETAPE\" journalMM.txt >stepMM.txt");


           $fo = $pathproj+"stepMM.txt";

           $fileId=`fopen $fo "r"`;
           string $nextLine = `fgetline $fileId`;

           $lres="";

           while ( !`feof $fileId` )
           {
                $nextLine = `fgetline $fileId`;
                if ($nextLine!="")
                {
                    $lres=$nextLine;
                }
           }

           fclose $fileId;

           $tabstp=stringToStringArray($lres," ");
           $ltab = size($tabstp)-1;
           if($ltab>0)
           {
                $ETAPEmm=$tabstp[$ltab];
                if($ETAPEmm==32)
                {
                  $PROGmm = 5;
                }
                else if ($ETAPEmm==16)
                {
                  $PROGmm = 10;
                }
                else if ($ETAPEmm==8)
                {
                  $PROGmm = 15;
                }
                else if ($ETAPEmm==4)
                {
                  $PROGmm = 20;
                }
                else if ($ETAPEmm==2)
                {
                  $PROGmm = 25;
                }
                else if ($ETAPEmm==1)
                {
                  $PROGmm = 30;
                }

           }
        }
        else
        {
           $PROGmm = 30;

           system("grep \"BEGIN BLOC\" journalMM.txt >blocMM.txt");
           $fo = $pathproj+"blocMM.txt";

           $fileId=`fopen $fo "r"`;
           string $nextLine = `fgetline $fileId`;

           $lres="";

           while ( !`feof $fileId` )
           {
                $nextLine = `fgetline $fileId`;
                if ($nextLine!="")
                {
                    $lres=$nextLine;
                }
```

```
            }

            fclose $fileId;

            $tabstp=stringToStringArray($lres," ");
            $ltab = size($tabstp)-1;

            $NBdezoom1 = $tabstp[$ltab];

        }

    }
    else
    {

        system("grep \"Out of "+$NBdezoom1+"\" journalMM.txt >blocMM.txt");
        $fo = $pathproj+"blocMM.txt";

        $fileId=`fopen $fo "r"`;

        $lres="";

        $ploc = 0;

        while ( !`feof $fileId` )
        {
            $lres = `fgetline $fileId`;
            $ploc = $ploc +1 ;
        }

        fclose $fileId;

        float $secpart = (float($ploc)/(float(2)*float($NBdezoom1)))*float(70);

        $PROGmm = 30 + floor($secpart);

    }


    if ($PROGmm>95)
    {
        $PROGmm = 95;
    }

    $lab = "Avancement de la correlation : "+$PROGmm+" %";
    text -edit -label $lab $MMPBT;
    progressBar -edit -pr $PROGmm $progressBarmm;

    pause -sec 1;

    $evol = alive($pid);
}


text -edit -visible 0 $MMPBT;
progressBar -edit -visible 0 $progressBarmm ;

chdir $posActu;

// Lecture du fichier PLY


$pathply = $pathproj+"PLY/"+$master+".ply";
$fileId=`fopen $pathply "r"`;

string $nextline = `fgetline $fileId`;  // ply
$nextline = `fgetline $fileId`;         // format ascii 1.0
$nextline = `fgetline $fileId`;         // element vertex 169339

$tabvertex = stringToStringArray($nextline, " ");

int $numvertex = $tabvertex[2];

$nextline = `fgetline $fileId`;         // property float x
$nextline = `fgetline $fileId`;         // property float y
$nextline = `fgetline $fileId`;         // property float z
$nextline = `fgetline $fileId`;         // property uchar red
$nextline = `fgetline $fileId`;         // property uchar green
$nextline = `fgetline $fileId`;         // property uchar blue
$nextline = `fgetline $fileId`;         // element face 0
$nextline = `fgetline $fileId`;         // property list uchar int vertex_indices
```

```
    $nextline = `fgetline $fileId`;          // end_header

    float $X[];
    float $Y[];
    float $Z[];
    float $R[];
    float $G[];
    float $B[];
    $i = 0;
    while ( !`feof $fileId` ) {
        $line = `fgetline $fileId`;
        $XYZRGB = stringToStringArray($line, " ");
        $X[$i]= $XYZRGB[0];
        $Y[$i]= $XYZRGB[1];
        $Z[$i]= $XYZRGB[2];
        $R[$i]= $XYZRGB[3];
        $G[$i]= $XYZRGB[4];
        $B[$i]= $XYZRGB[5];
        $i = $i + 1;
    }

    fclose($fileId);


    // Redaction du fichier MA de la corelation dense

    $fileId = fopen($pathcloud,"w");


    fprint($fileId,"requires maya \"2009\";\n");
    fprint($fileId,"currentUnit -l centimeter -a degree -t film;\n");
    fprint($fileId,"createNode transform -n \"particle1\";\n");
    fprint($fileId,"createNode particle -n \"particleShape0\" -p \"particle0\";\n");
    fprint($fileId,"addAttr -ci true -sn \"rgbPP\" -ln \"rgbPP\" -dt \"vectorArray\";\n");
    fprint($fileId,"addAttr   -ci   true   -h   true   -sn   \"rgbPP0\"   -ln   \"rgbPP0\"   -dt
\"vectorArray\";\n");
    fprint($fileId,"setAttr \".gf\" -type \"Int32Array\" 0 ;\n");
    fprint($fileId,"setAttr \".pos0\" -type \"vectorArray\" "+$numvertex+"\n");

    $cptsoligne = 0;

    for ($j=0;$j<$numvertex;$j++)
    {

        if ($cptsoligne == 20)
        {
            fprint($fileId,$X[$j]+" "+$Y[$j]+" "+$Z[$j]+"\n");
           $cptsoligne = 0;
        }
        else
        {
            fprint($fileId,$X[$j]+" "+$Y[$j]+" "+$Z[$j]+" ");

        }
        $cptsoligne = $cptsoligne + 1;
    }

    fprint($fileId,";\n");

    fprint($fileId,"setAttr \".rgbPP0\" -type \"vectorArray\" "+$numvertex+"\n");


    float $Rc;
    float $Gc;
    float $Bc;

    $cptsoligne = 0;
    for ($j=0;$j<$numvertex;$j++)
    {

        $Rc = $R[$j]/float(255);
        $Gc = $G[$j]/float(255);
        $Bc = $B[$j]/float(255);

        if ($cptsoligne == 20)
        {
            fprint($fileId,$Rc+" "+$Gc+" "+$Bc+"\n");
           $cptsoligne = 0;
        }
        else
        {
            fprint($fileId,$Rc+" "+$Gc+" "+$Bc+" ");
```

```
        }
        $cptsoligne = $cptsoligne + 1;

    }

    fprint($fileId,";\n");


    fprint($fileId,"createNode lightLinker -n \"lightLinker1\";\n");
    fprint($fileId,"setAttr -s 2 \".lnk\";\n");
    fprint($fileId,"setAttr -s 2 \".slnk\";\n");
    fprint($fileId,"select -ne :time1;\n");
    fprint($fileId,"setAttr \".o\" 1;\n");
    fprint($fileId,"select -ne :renderPartition;\n");
    fprint($fileId,"setAttr -s 2 \".st\";\n");
    fprint($fileId,"select -ne :renderGlobalsList1;\n");
    fprint($fileId,"select -ne :defaultShaderList1;\n");
    fprint($fileId,"setAttr -s 2 \".s\";\n");
    fprint($fileId,"select -ne :postProcessList1;\n");
    fprint($fileId,"setAttr -s 2 \".p\";\n");
    fprint($fileId,"select -ne :lightList1;\n");
    fprint($fileId,"select -ne :initialShadingGroup;\n");
    fprint($fileId,"setAttr \".ro\" yes;\n");
    fprint($fileId,"select -ne :initialParticleSE;\n");
    fprint($fileId,"setAttr \".ro\" yes;\n");
    fprint($fileId,"select -ne :hardwareRenderGlobals;\n");
    fprint($fileId,"setAttr \".ctrs\" 256;\n");
    fprint($fileId,"setAttr \".btrs\" 512;\n");
    fprint($fileId,"select -ne :defaultHardwareRenderGlobals;\n");
    fprint($fileId,"setAttr \".fn\" -type \"string\" \"im\";\n");
    fprint($fileId,"setAttr \".res\" -type \"string\" \"ntsc_4d 646 485 1.333\";\n");
    fprint($fileId,"connectAttr \":time1.o\" \"particleShape1.cti\";\n");
    fprint($fileId,"connectAttr \":defaultLightSet.msg\" \"lightLinker1.lnk[0].llnk\";\n");
    fprint($fileId,"connectAttr                                    \":initialShadingGroup.msg\"
\"lightLinker1.lnk[0].olnk\";\n");
    fprint($fileId,"connectAttr \":defaultLightSet.msg\" \"lightLinker1.lnk[1].llnk\";\n");
    fprint($fileId,"connectAttr \":initialParticleSE.msg\" \"lightLinker1.lnk[1].olnk\";\n");
    fprint($fileId,"connectAttr \":defaultLightSet.msg\" \"lightLinker1.slnk[0].sllk\";\n");
    fprint($fileId,"connectAttr                                    \":initialShadingGroup.msg\"
\"lightLinker1.slnk[0].solk\";\n");
    fprint($fileId,"connectAttr \":defaultLightSet.msg\" \"lightLinker1.slnk[1].sllk\";\n");
    fprint($fileId,"connectAttr \":initialParticleSE.msg\" \"lightLinker1.slnk[1].solk\";\n");
    fprint($fileId,"connectAttr \"lightLinker1.msg\" \":lightList1.ln\" -na;\n");
    fprint($fileId,"connectAttr \"particleShape1.iog\" \":initialParticleSE.dsm\" -na;\n");



    fclose($fileId);

    $img = `treeView -query -si treeCor`;
    treeView -edit -bh $img[0] 1 -bcl $img[0] 0 0.8 0 treeCor;
    TreeButton ("null","null");

    system("rm journalMM.txt");
    system("rm blocMM.txt");
    system("rm stepMM.txt");

  //nuages importés exportés dans NUBES

               $corelma = "Corel"+$master +".ma";
            textScrollList -e -append $corelma $nImp;

}
```

```
#include<iostream>
#include<QFile>
#include<QString>
#include<QList>
#include<QStringList>

#include<QTextStream>
#include"XML_GEN/ParamChantierPhotogram.h"
#include"XML_GEN/all.h"
#include"general/photogram.h"
#include <QtCore/QCoreApplication>


/*
 3Dsift est un logiciel servant a retrouver les coordonnées 3D des points SIFT après les calcul réalisé par PASTIS et APERO

 il prend en entré trois arguments :

   arg1 = chemin du chantier
   arg2 = Orientation de la première caméra
   arg3 = Orientation de la seconde caméra
   arg4 = chemin du fichier des points SIFT du couple
   arg5 = sortie ieme
   arg6 = le rapport *10
   arg7 = chemin de sortie


Exemple : 3DsiftNB /home/aymeric/Bureau/testmv/ Ori-F/OrFinale-F035_img_4627_MpDcraw8B_GB.xml Ori-F/OrFinale-F035_img_4628_MpDcraw8B_GB.xml Pastis/LBPp-Match-LBPpResol38_Teta0_F035_img_4627_MpDcraw8B_GB/LBPpResol38_Teta0_F035_img_4628_MpDcraw8B_GB.result 11 38 /home/aymeric/Bureau/

Auteur : Godet Aymeric

Date : 23 juin 2010


*/

int main(int argc, char *argv[])
{
    QCoreApplication a(argc, argv);

QString argv1 = argv[1];
QString argv2 = argv[2];
QString argv3 = argv[3];
QString argv4 = argv[4];
QString argv5 = argv[5];
QString argv6 = argv[6];
QString argv7 = argv[7];


QString coupleimg = argv1+argv4;

    QFile file(coupleimg);
    QFile outfile(argv7+"sift"+argv5+".ma");

    if ((file.open(QIODevice::ReadOnly))&&(outfile.open(QFile::WriteOnly)))
    {

        std::cout<<"Accee OK !"<< argc <<std::endl;


        // Declaration des variables

      QTextStream stream( &file );
        QTextStream out( &outfile );
        QString cam1,cam2,line,x1,y1,x2,y2,X,Y,Z;
        QStringList liste;
        QList<float> lX,lY,lZ,lR,lG,lB;
```

```
      // int R,G,B;
        Pt2dr pt1,pt2,pt1c,pt2c;
       Pt3dr sift3d;
         double * aD = new double;
        float rapp;

        //QImage * Iradio = new QImage(argv[4],"tif");
        //QRgb rgb;


        cam1 = argv1+argv2 ;
        cam2 = argv1+argv3 ;
        CamStenope* cams1 = Cam_Gen_From_File(cam1.toStdString(),"OrientationConique")->CS();
        CamStenope* cams2 = Cam_Gen_From_File(cam2.toStdString(),"OrientationConique")->CS();


        rapp = argv6.toFloat()/10;

     // REDACTION DE L'ENTETE DU FICHIER MAYA ASCII


        out<< "requires maya \"2009\";\n"
        "currentUnit -l centimeter -a degree -t film;\n"
        "createNode transform -n \"particle1\";\n"
        "createNode particle -n \"particleShape"+argv5+"\" -p \"particle"+argv5+"\";\n"
                "addAttr -ci true -sn \"rgbPP\" -ln \"rgbPP\" -dt \"vectorArray\";\n"
                "addAttr   -ci   true   -h   true   -sn   \"rgbPP0\"   -ln   \"rgbPP0\"   -dt
\"vectorArray\";\n"
                "setAttr \".gf\" -type \"Int32Array\" 0 ;\n";



       while ( !stream.atEnd() ) {
            line = stream.readLine(); // line of text excluding '\n'

            liste = line.split(QRegExp("\\s+"));


            x1 = liste.at(0);
            y1 = liste.at(1);
            x2 = liste.at(2);
            y2 = liste.at(3);

            pt1.x = x1.toFloat()*rapp;
            pt2.x = x2.toFloat()*rapp;
            pt1.y = y1.toFloat()*rapp;
            pt2.y = y2.toFloat()*rapp;

            pt1c = cams1->F2toC2(pt1);
            pt2c = cams2->F2toC2(pt2);

            //rgb = Iradio->pixel(floor(x1.toFloat()*rapp),floor(y1.toFloat()*rapp));

            //R = qRed(rgb);
           // G = qGreen(rgb);
           // B = qBlue(rgb);

          //  R = 255;
           // G = 255;
          //  B = 255;

            sift3d = cams1->PseudoInter(pt1c,*cams2,pt2c,aD);

            //out<< "-p " << sift3d.x << " " << sift3d.y << " " << sift3d.z << "\n";

            //X = sift3d.x;
            //Y = sift3d.y;
            //Z = sift3d.z;

            lX.append(sift3d.x);
            lY.append(sift3d.y);
            lZ.append(sift3d.z);
            lR.append(1);
            lG.append(0);
            lB.append(0);

            //std::cout<<"Ligne : X = " << X.toAscii() <<" : Y = " <<  Y.toAscii() <<" : Z = " << Z.toAscii() <<"\n"<<std::endl;
            //out << " " << sift3d.x << " " << sift3d.y << " " << sift3d.z <<"\n";
```

```
            //std::cout<<"Ligne " <<  i <<" : X = " << sift3d.x <<" : Y = " <<  sift3d.y <<" : Z = " << sift3d.z <<" : er = " << *aD
<<"\n"<<std::endl;
            //std::cout<<"Ligne " <<  i <<" : x1 = " << x1.toStdString() <<" : y1 = " << y1.toStdString() << "er : " <<  *aD
<<"\n"<<std::endl;

        }
         //std::cout<< "largeur : " << Iradio->size().width()<<"\n"<<std::endl;
        //out<<";";


        out<< "setAttr \".pos0\" -type \"vectorArray\" "<<lX.size();


        for (int j=0; j<lX.size(); j++)
        {

          out<<" "<<lX.at(j)<<" "<<lY.at(j)<<" "<<lZ.at(j);
        }

        out<<" ;\n";

        out<< "setAttr \".rgbPP0\" -type \"vectorArray\" "<<lX.size();
        for (int j=0; j<lX.size(); j++)
        {
          out<< " "<<lR.at(j)<<" "<<lG.at(j)<<" "<<lB.at(j);
        }
        out<<" ;\n";



        out<<"createNode lightLinker -n \"lightLinker1\";\n"
                "setAttr -s 2 \".lnk\";\n"
                "setAttr -s 2 \".slnk\";\n"
        "select -ne :time1;\n"
                "setAttr \".o\" 1;\n"
        "select -ne :renderPartition;\n"
                "setAttr -s 2 \".st\";\n"
        "select -ne :renderGlobalsList1;\n"
        "select -ne :defaultShaderList1;\n"
                "setAttr -s 2 \".s\";\n"
        "select -ne :postProcessList1;\n"
                "setAttr -s 2 \".p\";\n"
        "select -ne :lightList1;\n"
        "select -ne :initialShadingGroup;\n"
                "setAttr \".ro\" yes;\n"
        "select -ne :initialParticleSE;\n"
                "setAttr \".ro\" yes;\n"
        "select -ne :hardwareRenderGlobals;\n"
                "setAttr \".ctrs\" 256;\n"
                "setAttr \".btrs\" 512;\n"
        "select -ne :defaultHardwareRenderGlobals;\n"
                "setAttr \".fn\" -type \"string\" \"im\";\n"
                "setAttr \".res\" -type \"string\" \"ntsc_4d 646 485 1.333\";\n"
        "connectAttr \":time1.o\" \"particleShape1.cti\";\n"
        "connectAttr \":defaultLightSet.msg\" \"lightLinker1.lnk[0].llnk\";\n"
        "connectAttr \":initialShadingGroup.msg\" \"lightLinker1.lnk[0].olnk\";\n"
        "connectAttr \":defaultLightSet.msg\" \"lightLinker1.lnk[1].llnk\";\n"
        "connectAttr \":initialParticleSE.msg\" \"lightLinker1.lnk[1].olnk\";\n"
        "connectAttr \":defaultLightSet.msg\" \"lightLinker1.slnk[0].sllk\";\n"
        "connectAttr \":initialShadingGroup.msg\" \"lightLinker1.slnk[0].solk\";\n"
        "connectAttr \":defaultLightSet.msg\" \"lightLinker1.slnk[1].sllk\";\n"
        "connectAttr \":initialParticleSE.msg\" \"lightLinker1.slnk[1].solk\";\n"
        "connectAttr \"lightLinker1.msg\" \":lightList1.ln\" -na;\n"
        "connectAttr \"particleShape1.iog\" \":initialParticleSE.dsm\" -na;\n";
         file.close();
       outfile.close();

    }
    else
    {

        std::cout<<"Fichier non accessible ! "<<std::endl;
    }



    return 0;


    //return a.exec();
}
```