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%% Code to make plots like Noble's
MAIN_DIR = pwd;
load([MAIN_DIR filesep 'Master_Phy_Driver_COS.mat']);
load([MAIN_DIR filesep 'Master_Phy_Driver_PA.mat']);
Master_Phy_Driver_PA.CVP_SWP_Delta_Export =
Master_Phy_Driver_PA.CVP_DELTA_cfs+Master_Phy_Driver_PA.SWP_DELTA_cfs;
Master_Phy_Driver_COS.CVP_SWP_Delta_Export =
Master_Phy_Driver_COS.CVP_DELTA_cfs+Master_Phy_Driver_COS.SWP_DELTA_cfs;

VARIABLE = {'Keswick_Temp_F', 'FREEPORT_cfs', 'VERONA_cfs', 'WILKINS_cfs',
'CVP_SWP_Delta_Export'};
WATER_YEARS = {'Wet', 'Above_Normal', 'Below_Normal', 'Dry', 'Critical'};
UNITS = {'Deg F', 'CFS','CFS','CFS','CFS','CFS'};
for VAR = 1:length(VARIABLE)
    close all; fig1 = figure(1);
    for WY = 1:length(WATER_YEARS)
        subplot(3, 2, WY)
        WY_IDX = find(Master_Phy_Driver_PA.(WATER_YEARS{WY}) == 1 &
month(Master_Phy_Driver_PA.DATE) > 3 & month(Master_Phy_Driver_PA.DATE) < 11 );
        VALUE = (Master_Phy_Driver_PA.(VARIABLE{VAR})(WY_IDX)-
Master_Phy_Driver_COS.(VARIABLE{VAR})(WY_IDX));
        GROUPS = month(Master_Phy_Driver_PA.DATE(WY_IDX));
        boxplot(VALUE, GROUPS,'Labels',{'Apr','May','June','July', 'Aug', 'Sep', 'Oct'})
        hold on;
        plot([0 11], [0 0], 'LineWidth', 2, 'color', [.4 .4 .4]);
        ax = gca;
        ax.YLabel.String = ([ 'PA-COS ' UNITS{VAR}]);
        T = title(regexprep(WATER_YEARS{WY}, '_',' '));
        if WY == 1
            text(.7, 1.3, regexprep(VARIABLE{VAR}, '_',' '), 'units', 'normalized', 'fontsize', 20);
        end
    end
end
print(fig1, '-dpng', '-r200', [MAIN_DIR filesep 'Driver_' VARIABLE{VAR} '_Compare_Nobel.png'])
end

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